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ABSTRACT

Twelve major papers delivered during this conference on agricultural education in the Northeastern states are included in this volume: (1) "Status of Pennsylvania Special Needs Students in Vocational Agriculture: Phase IV--Job Performance Follow-Up," by Dennis C. Scanlon and Connie D. Baggett; (2) "Education, Age and Experience: Their Correlation with Educational Effectiveness and Teacher Beliefs," by Michael G. Rush; (3) "Perceived Competencies of Newly Employed County Extension Agents," by Daniel Z. Sendeu and Stacy A. Gartin; (4) "The Development of a Teaching Clarity Scale for Beginning Teachers of Vocational Agriculture," by Randol G. Waters, James H. Mortensen, and Edgar P. Yoder; (5) "A Comparison of Agricultural Mechanics Competencies Needed and Competencies Possessed by Vocational Agriculture Teachers in Nebraska," by William L. Umbaugh and Roy D. Dillon; (6) "Vocational Agricultural/Agribusiness Employment Needs Assessment in St. Mary's, Charles, Calvert and Anne Arundel Counties, Maryland," by Elmer L. Cooper and Hilton L. Harrod; (7) "Development and Experimental Evaluation of a Microcomputer Based Software Package for Recordkeeping in SOE," by Jeffrey A. Wood; (8) "Comparison of the Perceptions of Agricultural Personnel Regarding Professional Competencies Needed by Intermediate Agricultural Extension agents in Kenya," by Wycliffe N. Ongondo and James H. Mortensen; (9) "Factors Affecting Job Satisfaction: Cornell Graduates (1974-1982) in Agricultural Education," by Richard W. Tenney; (10) "Knowledge, Attitudes, and Teaching Practices of Vocational Agriculture Teachers Concerning the Public Law 94-142, The Education for All Handicapped Children Act," by Calvin F. Dill and Susan Browne; (11) "Computer Practices Used, and Software Needs by Use Category and Program, among Agriculture Teachers, Postsecondary Teachers, and Extension Agents," by Arthur L. Berkey and H. Dean Sutphin; and (12) "Vocational Agriculture Teachers' and Their Administrators' Perceptions Concerning Selected Activities/Tasks Performed by Vocational Agriculture Teachers," by Jethro Similane and

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FOREWORD

A critical analysis of important issues and problems in agricultural education is vital for continued growth in the profession. Through forums, such as the Eastern Region Agricultural Education Research Conference, important issues and problems are analyzed, critiqued, and discussed. Hopefully, seminars such as this will provide a challenge for the continued improvement, conduct and implementation of research finding and recommendations.

A special thanks is extended to conference session chairmen, discussants, recorders, and presenters. Appreciation is expressed to agricultural educators from Maryland who have served as gracious hosts. Finally, the leaders of the Eastern Region Supervisors and teacher educator professional associations are commended for their leadership in organizing regional activities which contributed to the success of this research conference.

Dennis Scanlon, Co-chairman
Research Seminar

Stacy Gartin, Co-chairman
Research Seminar

EASTERN REGION AGRICULTURAL EDUCATION
RESEARCH CONFERENCE

SESSION A

CHAIRMAN: Edgar P. Yoder

RECORDER: James W. Hilton

DISCUSSANT: Calvin F. Dill

Status of Pennsylvania Special Needs Students in Vocational Agriculture: Phase IV--Job Performance Follow-Up

Dennis C. Scanlon
Connie D. Baggett
The Pennsylvania State University

Education, Age and Experience: Their Correlation with Educational Effectiveness and Teacher Beliefs

Michael G. Rush
The Pennsylvania State University

DISCUSSANT: H. Dean Sutphin

Perceived Competencies of Newly Employed County Extension Agents

Daniel Z. Sendeu
Stacy A. Gartin
West Virginia University

The Development of a Teaching Clarity Scale for Beginning Teachers of Vocational Agriculture

Randol G. Waters
James H. Mortensen
The Pennsylvania State University

A Comparison of Agricultural Mechanics Competencies Needed and Competencies Possessed by Vocational Agriculture Teachers in Nebraska

William L. Umbaugh
The Pennsylvania State University

Roy D. Dillon
University of Nebraska

EASTERN REGION AGRICULTURAL EDUCATION
RESEARCH CONFERENCE

CONCURRENT SESSION B

CHAIRMAN: Stacy Gartin

RECORDER: Hobart L. Harmon

DISCUSSANT: Alfred J. Mannebach

Agriculture/Agribusiness Employment Needs in Selected Maryland Counties

Elmer L. Cooper
Hilton L. Harrod
University of Maryland

Guidelines to Identify Priorities in Agricultural Research in Production Farming for the Small Farmer in Swaziland

Sebenzile P. J. Matsebula
James H. Mortensen
The Pennsylvania State University

Development and Experimental Evaluation of a Microcomputer Based Software Package for Recordkeeping in SOE

Jeffrey A. Wood
Cornell University

DISCUSSANT: Calvin F. Dill

The Professional Competencies Needed by Intermediate Agricultural Extension Personnel in the Kenya Agricultural Extension Service

Wycliffe N. Ongondo
James H. Mortensen
The Pennsylvania State University

EASTERN REGION AGRICULTURAL EDUCATION
RESEARCH CONFERENCE

CONCURRENT SESSION C

CHAIRMAN: Dennis C. Scanlon

RECORDER: John K. Grover

DISCUSSANT: James H. Mortensen

Factors Affecting Job Satisfaction: Cornell Graduates (1974-1982) in Agricultural Education

Richard W. Tenney
Cornell University

Knowledge, Attitudes, and Teaching Practices of Vocational Agriculture Teachers Concerning Public Law 94-142, The Education For All Handicapped Children Act

Calvin F. Dill
University of New Hampshire

Computer Practices Used, and Software Needs by Use Category and Program, Among Agriculture Teachers, Post-Secondary Teachers, and Extension Agents

Arthur L. Berkey
H. Dean Sutphin
Cornell University

DISCUSSANT: H. Dean Sutphin

Vocational Agriculture Teachers' and Their Administrators' Perceptions Concerning Selected Activities/Tasks Performed by Vocational Agriculture Teachers

Jethro M. Simelane
Layle D. Lawrence
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STATUS OF PENNSYLVANIA SPECIAL NEEDS STUDENTS IN VOCATIONAL AGRICULTURE: PHASE IV--JOB PERFORMANCE FOLLOW-UP

(Ag Experiment Project No. 2484)

A Paper Presented

at

Eastern Region Agricultural Education Conference
and Research Seminar

of

NVATA-NASAE-AATEA

at

Easton, Maryland

May 10-11, 1985

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STATUS OF PENNSYLVANIA SPECIAL NEEDS STUDENTS IN VOCATIONAL AGRICULTURE: PHASE IV--JOB PERFORMANCE FOLLOW-UP

INTRODUCTION

In 1975, Congress passed into law the Education of All Handicapped Children Act (P.L. 94-142). The Act mandated that all physically, mentally, and emotionally handicapped children be provided with the opportunity to receive a free, appropriate public education (Simonson, 1980, p. 1). This Act was reinforced and expanded with passage of the Education Amendment of 1976 (P.L. 94-482). In addition, previous legislation--the Vocational Rehabilitation Act of 1973--guaranteed that all handicapped persons shall have equal access to all programs, jobs, and housing (Cartwright, Cartwright, and Ward, 1981, p. 3).

Each year since 1968, at least 25 percent of the federal vocational education appropriations have been set aside for the education of special needs students. One of the eight priority goals for vocational education in the 1978-79 Pennsylvania State Plan was to develop and expand vocational education opportunities for the disadvantaged and handicapped. Federal and state funds helped generate an interest and increase in the number of educational programs for special needs students. Although federal legislation requires states and school districts to maintain data on special needs students, little empirical evidence exists to suggest that school districts are providing direction to educational programs for special needs students.

RATIONALE FOR THE STUDY

The capstone for many vocational programs is the placement of students in industry so they may sharpen skills learned in the school setting. As a result, students have an opportunity not only to hone these skills but also to learn new skills closely aligned with those skills needed to obtain, maintain, and progress in the world of work. Mason and Haines (1965) discussed several placement programs that should be a part of the vocational program. They stated that "the occupational experience is expected to be the source for gaining knowledges as well as a vehicle for applying and testing what has been learned in school" (p. 51). When Mason and Haines referred to occupational education for special needs students, they emphasized that the "program is used as a transitional bridge to the adult world for students" (p. 67).

Before special needs students are placed in positions for work experience they must be successful in the program of instruction in the school setting. There is much debate as to the effectiveness of educational approaches in helping special needs students gain as much knowledge as possible before being placed on the job. Finn and Resnick (1984) believe that "our past preoccupation with the setting in which intruction happens has probably been misplaced" (p. 9). They feel that the "instruc-

tional processes that are most effective need to be identified instead" (p. 9). Much research about the instructional setting has taken place but the findings are ambiguous and inconclusive according to Messick (1984). Many special education students do need individual instruction to be successful.

Placing students into different categories (EMR, SED, LEP) has had adverse affects on the expectation of these students. Generally, there is a widespread feeling that these students have a low capacity to learn. The job market, on the other hand, expects each employee to be equally productive and special needs students are no exception. To insure that special needs students learn the greatest amount of information, Finn and Resnick identified several instructional program strategies that may be used. They are programs in which:

1. The teacher provides daily work assignments and thus determines the pace of work;
2. There is regular recording and reviewing of each child's program based on tests directly related to the curriculum content;
3. Systematic reward for good behavior and learning is offered; and
4. A significant amount of one-on-one instruction, sometimes by peer tutors, is given (p. 10).

The ultimate goal of educating special needs students is to help them become self-sufficient. This translates into program graduates "holding a job for which one has or can obtain the necessary skills and for which one is sufficiently reinforced; that is, job match and job satisfaction" (Larsen and Poplin, 1980, p. 115). Placement of special needs students in positions in the work world helps to accomplish this goal, be it for training or employment. There are students classified as special needs students who need "training to work in an institutional or sheltered workshop setting, and there are handicapped students who become competent professionals within various occupation circles" (p. 114).

PREVIOUS RESEARCH ON THE STUDY

In the summer of 1980, The Pennsylvania State University, Department of Agricultural and Extension Education, in cooperation with the Agricultural Experiment Station, initiated a comprehensive four-year study to determine the status of Pennsylvania special needs students in vocational agriculture. The study was divided into four phases:

Phase I -- Identification of Students, Teacher Problems, and Teacher Competence

Phase II -- Curriculum and Education Facilities

Phase III -- Placement for Training and Employment

Phase IV -- Job Performance Follow-up

The study was conducted over a four year period--one phase each year since 1980. In Phase I of the study, Mallilo, Baggett, and Curtis (1983) reported that there are a significant number of handicapped students enrolled in vocational agriculture in Pennsylvania. The researchers (Mallilo, Baggett, and Curtis, 1982) in Phase II found that over 96 percent of the vocational agriculture programs in Pennsylvania have not developed or purchased curriculum materials or altered instructional methods to accommodate special needs students. In Phase III of the study, the researchers (Baggett, Scanlon, and Curtis, 1984) found that generally only a small percentage of special needs students were placed for training or for employment. This report summarized Phase IV of the study which was conducted during the 1983-84 school year.

OBJECTIVE OF PHASE IV

The objective of Phase IV of the study was to follow up employed special needs students and determine their performance on the job.

METHODS AND PROCEDURES

The descriptive method of research, using the survey technique, was used to fulfill the objective of Phase IV. The researchers solicited a number of forms currently used by secondary school systems for rating job performance of special needs students. Other forms appropriate for rating job performance of workers also were collected. A form was selected by a consensus of the three researchers that rated employee job performance in 11 areas: (1) work quality, (2) work quantity, (3) work timeliness, (4) attention to detail, (5) reaction to supervision, (6) job knowledge, (7) attendance, (8) influence on co-workers, (9) safety performance, (10) communication effectiveness, and (11) overall evaluation performance.

The collection of job performance data consisted of two steps. First, a stratified random sample was taken based upon the number of special needs students enrolled in vocational agriculture programs throughout Pennsylvania. This information was obtained from Phase I of this four-year study. The sampling procedure resulted in 75 schools or a 29.5 percent stratified random sample (53% Eastern PA, 13% Central PA, 34% Western PA) of schools with special needs students enrolled in vocational agriculture. For comparison, all area vocational-technical schools with special needs students but without vocational agriculture programs (38) were selected to participate in Phase IV of the study.

A letter was mailed to the vocational agriculture teachers at the 75 schools and to the director of student services at the 38 area vocational-technical schools. The letter requested the names of five special needs students who had graduated within the last three years and were currently employed or placed. In addition, the letter requested the name, address and telephone number of each student's employer. A form was provided with the letter so that the information could be easily recorded. The

teachers and directors of student services were assured confidentiality of all names, addressss and telephone numbers. A follow-up was conducted to solicit the information from nonrespondents. Only three schools responded to the follow-up.

Sixteen schools with vocational agriculture programs (21.3%) provided the names of 19 students and their employers. Eight (21%) area vocational-technical schools provided names of 29 students and their employers. In total, 24 of the 113 schools (21.2%) responded to the request for names of students and employers. A total of 48 students and their employers were identified.

As the second and final step toward collection of data, a job performance rating form was mailed to each of the 48 employers identified in step one. A follow-up was conducted to solicit forms from nonrespondents. In total, only 9 employers (18.8%) returned the rating form, of which one was incomplete and not usable for analysis.

FINDINGS AND DISCUSSION

Follow-up of program graduates is essential if monies and efforts invested in the education of special needs students are to return benefits to both the students and society. In Phase III of this four-year study, 55 schools reported that 759 special needs students were placed for employment (see Table 1). However, in this phase of the study 24 schools reported the names of only 48 students and their employers. This represents only 6.3 percent of the 759 students identified by the schools in Phase III.

Table 1
Number of Students Placed for Employment by Handicapping Condition as Reported by Schools With and Without Vocational Agriculture Programs (n = 55)

Handicapping Condition	Placed for Employment					
	With Vo-Ag		Without Vo-Ag		Totals	
	No.	%	No.	%	No.	%
Learning Disabled	109	50.2	174	32.1	283	37.3
Educably Mentally Retarded	42	19.4	197	36.4	239	31.5
Visually Handicapped	1	.5	5	.9	6	.8
Emotionally Disturbed	10	4.6	106	19.6	116	15.3
Physically Impaired	22	10.1	42	7.7	64	8.4
Speech Impaired	21	9.7	13	2.4	34	4.5
Deaf	12	5.5	5	.9	17	2.2
Totals	217	100.0	542	100.0	759	100.0

Some reasons for the low response rate regarding the names of students and their employers may be explained in comments made by school teachers and student services directors in letters or on incomplete forms returned to the researchers. Among the reasons cited for non-response were the following:

1. Confidentiality problem
2. Unknown at present time
3. Student was working but currently unemployed
4. Student currently seeking employment
5. Do not keep these records
6. All records destroyed each year
7. No information available as result of change in personnel and office locations

Analysis of data showed some interesting findings regarding job performance of special needs students. Table 2 shows the mean ratings by employers of the eight students. No comparison was made between students who atteneded a school with vocational agriculture program (1 student) and students who attended an area vocational-technical school wihout a vocational agriculture program (7 students).

Table 2
Mean Job Performance Scores of Special Needs Students as Rated by Employers
(n = 8)

Performance Item	Mean Score*	Rank
1. Work quality	5.25	5
2. Work quantity	4.63	7
3. Work timeliness	5.13	6
4. Attention to detail	4.50	9
5. Reaction to supervision	5.50	2
6. Job knowledge	4 63	7
7. Attendance	5.88	1
8. Influence on co-workers	4.38	10
9. Safety performance	5.38	3
10. Communication effectiveness	5.38	3
11. Overall evaluation of performance	4.50	--
Grand Mean	5.07	--

* Performance scale: 1 = unacceptable, 2 = low, 3 = below average, 4 = average, 5 = above average, 6 = high, 7 = extremely high

The employers' ratings of the students who enrolled in vocational agriculture while in high school or attended an area vocational-technical school without vocational agriculture yielded a grand mean for the 10 performance items of 5.07. The employers' overall evaluation of student performance was a mean of 4.50. Generally, special needs students in this study were rated "average" to "above average" on performance of the 10 items.

Special needs students rate highest in attendance and lowest in influence on co-workers. However, employers rated the students' influence on co-workers as slightly higher than "average." The employers also rated special needs students "average" in work quantity and job knowledge. The students were rated "above average" by the employers in reaction to supervision, safety performance, communication effectiveness, work quality, and work timeliness.

Employers were asked to make additional comments about the employee in the areas of accomplishments, problems, and overall evaluation. A listing of the employers' comments follows.

Accomplishments:

- -- Much more capable than I expected.
- -- ...has shown adequate interest in obtaining further knowledge about the job and is not afraid to tackle new experiences.

Problems:

- -- ...seemed fearful and timid of equipment...moved him to air circulation department where he seems to be doing well.
- -- ...had a drinking problem...has married since and problem has eased greatly.
- -- ...is deaf...should have someone to sign to clearly understand but is quick to learn by watching others to see how it is done.
- -- On occasion a bit moody...attributed to a poor home life.
- -- Lack of experience and knowledge in certain areas hinders quality in workmanship...eagerness to learn prevails...is not off on the right foot.

Overall Evaluations:

- -- He is doing a good job. About as much as we can expect.
- -- Does what he is told...rather hurried...not the best quality...must be reminded.
- -- Very pleased.
- -- A sincere and honest person...interested in geriatrics.
- -- Very good employee.
- -- ...enthusiasm to perform well...shows promising effects on his future in the mechanical field and also with life's reponsibilities.
- -- Good dependable employee...about average.

RECOMMENDATIONS

It should be noted that the low response rate is a serious limitation to the generalizability of the findings. Nonetheless, several recommendations seem warranted relative to the sample in this study:

1. Local school districts should give much greater attention to the collection and use of follow-up data for special needs students.

2. Local school districts should inform the general public of the average or above average performance level of special needs students enrolled in vocational programs. This would somewhat counteract the steretotype that special need students are low or below average performers in the world of work.

3. Employers of special needs students need to keep performance records and provide feedback to the student and the local school teachers, student services personnel, and administrators. This information should help schools develop programs that bridge the gap between students' handicap conditions and expected job performance in the world of work.

4. The State Department of Education should establish criteria by which school adminstrators, teachers, and the public can evaluate educational programs for special needs students. State funding of programs for special needs students should encourage the collection and use of student follow-up data in program design and job placement.

5. Additional study is needed to determine employer satisfaction with and personnel management practices of special needs students in the world of work.

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EDUCATION, AGE AND EXPERIENCE: THEIR CORRELATION WITH EDUCATIONAL EFFECTIVENESS AND TEACHER BELIEFS

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INTRODUCTION/NEED FOR THE STUDY

Teacher educators in agricultural education are in the business of educating qualified, effective teachers. Pressures for accountability have forced teacher educators into quantifying the effectiveness of that education. To accomplish this, the major thrust of recent research has been to identify professional and technical competencies needed by agricultural teachers. Most of these studies have resulted in lists of professional and technical competencies developed from the opinions of individuals in the profession and validated by agricultural teachers, teacher educators, and state supervisors. Effective teachers, however, can neither simply be identified by their command of technical subject matter nor their use of a particular instructional methodology (Combs, 1969). The teacher plays the crucial role in the educational process, not simply as a user of techniques, but as an integral component of the educational environment. How to prepare that "integral component" is not a matter of record, but it is clear that research must move beyond a simple identification of competencies.

One factor with potential for influencing teacher effectiveness is the beliefs and philosophies held by teachers. Several studies in general and vocational education have demonstrated a relationship between teacher beliefs and teacher effectiveness (Fabian, 1976; Gooding, 1969; Schutz, 1976; & White, 1976). Teacher beliefs can have an impact on classroom decision making (Borko and Niles, 1982), program standards (Dean, 1982), program direction (Preskill, 1984), and evaluation of methods and curricula (Baatz, 1980). Teachers and teacher educators in vocational education have also emphasized the importance of a sound instructional philosophy. For example, yearbooks of the American Vocational Association including the Philosophy for Quality Vocational Education Programs (Barlow, Ed., 1974), and the Future of Vocational Education (Swanson, Ed., 1981) have addressed philosophical issues. Agricultural educators took an additional step toward a unified philosophy when the Agricultural Education Division of the American Vocational Association (AVA) adopted The Philosophy of Vocational Agricultural Education at the AVA Convention in December of 1975. That statement listed key concepts "that provide a stability and direction" to the vocational agriculture program (Agricultural Education Division, 1976).

The adoption of a philosophy by the professional organization, however, does not automatically mean educational practice will be improved. The beliefs adopted must first be accepted by those teachers who are responsible for implementing the program, and secondly those beliefs must have a positive influence on teacher effectiveness. From the standpoint of a teacher education program, the question of how much impact teacher

education has on teacher effectiveness must also be answered. Some would maintain that factors other than education are more closely related to teacher effectiveness or the development of teacher beliefs than education. This paper focuses on those relationships.

OBJECTIVES OF THE STUDY

The overall purpose of the research project was to investigate the relationships among teacher effectiveness, teacher beliefs and philosophies, and selected demographic variables. The specific purposes of the data collected and reported for this paper were to investigate the relationship between selected demographic variables and teacher effectiveness, and the relationship between selected demographic variables and teacher agreement with the philosophy adopted by the Agricultural Education Division of the AVA.

Specific research questions were:

1. What is the relationship between teacher effectiveness and each of the variables of educational level, age, years of experience, years in present position, and level of students taught.

2. What is the relationship between teacher agreement with the philosophical statement adopted by the Agricultural Education Division, AVA and each of the variables of educational level, age, years of experience, years in present position, and level of students taught.

METHODS AND PROCEDURES

Data Sources

The data for this study were collected from vocational agriculture teachers in Virginia. Teachers identified as the most and least effective in the state were used to answer research question 1. Thirty nine teachers were included in the most effective group and 30 teachers were included in the least effective group. The total population of teachers returning instruments (285 teachers or 77.4%) was used to answer research question 2.

Methods

The research methodology used in this investigation was descriptive in nature and descriptive statistics were used to describe the relationships of

interest. Since the study dealt with a population, inferential statistics were not deemed appropriate and were not used.

The sample of most and least effective agricultural teachers was obtained by asking state supervisors to identify 11% of the most effective and 11% of the least effective teachers in their particular region using a mutually developed and agreed upon list of criteria. The supervisors were also asked to identify 3% of their teachers in each category as alternates. The names of the teachers identified were then randomized and presented to a panel of teacher educators from the two teacher training institutions in Virginia. The teacher educators were asked to identify the teachers on the list as being in the most or least effective category. Only the teachers upon which the state supervisors and teacher educators agreed were used in the study.

The data for this study were collected via a validated, mailed instrument which contained a series of statements taken directly from The Philosophy of Vocational Agricultural Education, and questions about selected demographic information. The philosophical statements were rated by the teachers on a 1 to 6 Likert-type scale.

The data were analyzed using correlation coefficients and frequencies. The data on whether the teacher taught junior high and/or senior high school were analyzed using frequencies. Biserial correlation coefficients were calculated to measure the relationship between teacher effectiveness and each of the remaining demographic variables for research question 1. Pearson product-moment correlation coefficients were calculated to compare agreement with the overall philosophy adopted by the profession and the remaining demographic variables for research question 2.

Effect sizes for purposes of discussing the data for research questions 1 and 2 followed Cohen's (1969, pp. 76-77) recommendations: Small effect size -- $r = .10$; medium effect size -- $r = .30$; large effect size -- $r = .50$.

RESULTS: FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings

Research question 1

Data for this research question are presented in Table 1. A positive correlation was found between teacher effectiveness and each of the demographic variables. The highest correlation was with educational level which had a medium effect size. Total years of experience, years in present position, and age all had a small effect size of less than .30. A higher percentage of the most effective teachers taught senior high only while higher percentages of the least effective teachers taught junior and senior high, and junior high only.

Table 1
Demographic Variables and Comparisons With Teacher Effectiveness

Concepts		Teachers		r
		Most[1]	Least[2]	
Highest educational level obtained	M	3.56[3]	2.31	.45
	SD	1.74	1.51	
	n	39	29	
Age	M	37.18	34.86	.16
	SD	8.88	8.95	
	n	39	29	
Total years of teaching vocational agriculture	M	13.90	10.50	.26
	SD	7.87	8.16	
	n	39	30	
Years in present position	M	11.18	8.80	.22
	SD	6.75	6.85	
	n	39	30	
Level of students taught:				
Junior High	n	7	10	
	%[4]	17.9	33.3	
Senior High	n	22	8	
	%	56.4	26.7	
Junior and Senior High	n	10	12	
	%	25.6	40.0	

[1]Most = teachers judged as being the most effective.
[2]Least = teachers judged as being the least effective.
[3]1 = bachelor; 2 = bachelor + 15; 3 = bachelor + 30; 4 = master's; 5 = master's + 15;
6 = master's + 30; 7 = more than master's + 30.
[4]Percentage within each teacher group.

Research question 2

Teacher agreement with the philosophical statement adopted by the profession was high (M = 5.16). None or almost none of the variance in agreement could be explained by the demographic variables.

Conclusions

1. Additional education is more highly correlated with teacher effectiveness than either age, experience or agreement with the philosophy adopted by the profession.
2. Most of the variance in teacher effectiveness cannot be explained by education, age or experience.
3. Agreement with the philosophy adopted by the profession is not systematically related to education, age or experience.

Recommendations

1. Research is needed to determine how education contributes to teacher effectiveness and influences teacher beliefs.
2. Research is needed to determine if there are differences in the way teachers of differing educational levels, ages and experience implement stated philosophies or beliefs.
3. Research is needed to determine the other factors that contribute to teacher effectiveness.

Discussion

This study would suggest that education is related to teacher effectiveness and that education has more impact than either age or experience. Extreme care in interpreting these results must be taken, however, since correlation does not imply causality. In other words, people who are good teachers may simply be more prone to take additional courses. Still, educational level did explain almost twice the variance of experience and more than twice the variance explained by age.

On the other hand, most of the variance between the most and least effective teachers could not be explained by any of the demographic variables. If education does indeed cause better teachers, then teacher educators still have a lot of room for improvement. Although education did not relate to teacher beliefs, that does not necessarily mean that education had no impact on those beliefs. All of the teachers agreed strongly with the philosophy adopted by the profession. Evidently the beliefs of the profession are being effectively communicated to the teachers. How well the teachers implement those beliefs or even whether those beliefs are the most important for effective teaching are still questions that need to be answered.

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RESEARCH PAPER

PERCEIVED COMPETENCIES OF NEWLY EMPLOYED COUNTY AGRICULTURAL EXTENSION AGENTS

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PERCEIVED COMPETENCIES OF NEWLY EMPLOYED COUNTY EXTENSION AGENTS

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The Smith-Lever Act of 1914 created the cooperative partnership between the U.S. Department of Agriculture, Land Grant Colleges and Universities and the County (or in some cases Municipal) Governing Boards. Since establishment of the Act, educational programs have continually been broadened in order to meet needs and interests of the clientele. An essential component of the organization has been its dedicated and well-trained staff. Extension workers require special knowledge or competence in a number of broad areas. Thus the Extension Service must attract and employ competent personnel if it is to effectively serve the clientele and meet the educational challenges of the future.

Throughout the U.S.A., county extension agents work principally under the same organizational set up and under a common philosophy based on the importance of the individual in the promotion of progress and for the nation as a whole. This study, being national in scope, will therefore provide information that may enable professional educators to analyze and redirect courses and inservice educational programs in agricultural extension in Land Grant Universities.

Purpose

The primary purpose of this study was to assess the professional education competencies of newly employed county agricultural extension agents as perceived by directors of Cooperative Extension Service and presidents of County Extension Agent Associations. The results of the study should enable professional educators in both developed and developing countries to evaluate, modify and strenghten extension education preservice and inservice programs.

Procedure

The descriptive method of research was used in this study. Data presented were obtained from the population comprised of 50 state directors of Cooperative Extension Service and 49 presidents of County Extension Agent Associations.

A survey instrument consisting of 76 professional education competencies was prepared following a review of literature and with assistance from the graduate committee. A questionnaire form was mailed to the directors of CES and CEAA presidents on October 29th, 1981. A followup letter was sent after three weeks to those who had not responded. Ninety-three directors and presidents received the instrument of which 74, or 79.6 percent, returned the completed form.

The 76 competencies were categorized into 11 major areas as follows: structure and function of the organization, program planning, program execution, evaluation, leadership development, administrative duties, communication skills, extension teaching methods, community relations, professional role and development, and farm and home visits. Each competency statement was listed on the survey instrument with a four-point Likert scale with numerical values assigned to possible responses as follows: 0 = No Competence, 1 = Low Competence, 2 = Moderate Competence, 3 = High Competence. Responses were transferred from the opinionnaires to IBM cards. Approximate statistical information was determined through use of West Virginia University Computer Center facilities.

Data pertaining to study objectives were analyzed by determining the mean and standard deviation for each competency category and each statement, and further examined by position of respondents and by region.

Findings

The major findings of this study are summarized in the following statements.

1. Directors and presidents perceived newly employed extension agents to be least competent in abilities related to structure and function of the organization. The highest perceived competencies were those associated with professional role and development.

2. Competencies of newly employed agents considered moderate were those under the following categories: program execution, communication skills, farm and home visits and community relations.

3. Five competency categories were assessed moderately low: extension teaching methods; program planning; leadership development; program evaluation and administrative duties.

4. Directors assessed newly employed county agricultural extension agents higher than did the presidents in 8 of the 11 major competency categories. They were: professional role and development; communication skills; farm and home visits; community relations; extension teaching methods; leadership development; administrative duties; and program planning. On the contrary, presidents perceived competencies of newly appointed agents slightly higher than did directors in the remaining three competency categories: program execution; evaluation; and structure and function of the organization.

5. Directors and presidents disagreed considerably in their perceptions of the newly employed agents' competencies in the areas of program execution and professional role and development.

6. Southern region respondents rated competencies of newly employed agents consistently lower than did those in the other three regions.

7. While all competencies pertaining to structure and function of the organization were rated low, there was a considerable difference in perceptions of directors and presidents regarding the ability of newly employed agents to describe the role of extension director, division leaders, specialists and county/area extension agents. Ability to relate significant historical background of Cooperative Extension Service to present programs and situations was assessed lowest.

8. With regard to program planning competencies of newly employed county agents, the lowest overall rating was given to the ability to prepare long range programs of work, while the highest rating was given to technical knowledge of the newly employed agent.

9. With respect to program execution competencies, respondents rated newly employed extension agents highest in ability to follow a calendar of work and in maintaining rapport with clientele. New workers' ability to identify and use early adopters was rated lowest.

10. Concerning evaluation competencies, directors and presidents rated newly employed agents low in all the seven statements and they perceived them to be lacking in ability to evaluate program accomplishments and planning of work.

11. Study participants rated competence of newly employed agents quite low in all aspects of leadership development. Especially serious deficiencies were noted in awareness of the social action process and the power structure within communities.

12. Accepting program direction, guidance and supervision from program specialists and administrative supervisors and coordination of equipment and facilities as elements of administrative duties were perceived to be strengths of newly employed agents by both groups of respondents. Participants strongly agreed that newly employed agricultural extension agents have difficulty in explaining retirement and insurance policies and procedures, describing wage and salary administration and preparing job descriptions.

13. Study groups believed that newly employed extension agents were relatively skilled in communication matters. Southern region respondents were somewhat critical with respect to letter and report writing skills and scholarly discussion abilities of their new agents.

14. With respect to extension teaching methods, directors and presidents concurred that newly employed agents were able to plan, prepare for and conduct applied demonstrations and employ principles of learning in teaching youth and adults. Study participants perceived that newly employed extension agents were not competent in developing criteria for evaluating various teaching methods.

15. Directors and presidents strongly agreed that newly employed agents were able to handle all aspects of community relations except for the ability to inform local officials, constituents and the general public of program purposes and goals.

16. Regarding professional role and development respondants felt that newly employed agricultural extension agents were competent in all aspects.

17. Relatively high ratings were given with respect to competencies involved in farm and home visits. However, Southern region participants gave low competency ratings to new employees in their ability to design appropriate educational experiences and to identify characteristics of potentially successful farming programs.

Conclusions

From analysis of information received from 40 state directors of Cooperative Extension Service and 34 state presidents of County Extension Agent Associations during September/October, 1981, the following conclusions were drawn:

1. Newly employed county agricultural extension agents are not well informed about structure and function of the organization of the Cooperative Extension Service, and lack competencies in the areas of program planning, program evaluation, leadership development, administrative duties and extension teaching methods.
2. Newly employed county extension agents are relatively competent in areas of program execution, professional role and development, communication skills, farm and home visits and community relations.
3. Directors of CES evaluate competencies possessed by newly employed county extension agents higher than do presidents of CEAA.

4. Preservice and inservice training for prospective and newly employed county extension agents should emphasize structure and function of the organization, leadership development, evaluation and administrative duties.
5. Directors of CES and presidents of CEAA from the Southern region perceive their newly employed extension agents to be less competent than do those from other regions.
6. There is a definite need for extensive inservice training for newly employed extension agents. Preservice training is considered inadequate by directors of CES and presidents of CEAA.

Recommendations

This study was designed to assess professional education competencies of newly employed county agricultural extension agents (those employed in the past three years), as perceived by state directors of Cooperative Extension Service and state presidents of County Extension Associations.

To assure competence of agricultural county extension agents in the United States, it is important to periodically evaluate their performance and adjust training programs accordingly. Analysis of responses of the study population groups, as well as their comments, reveals suggestions for improvement in major areas of instruction in preservice and initial inservice programs for newly employed agents. Based on the findings and conclusions resulting from this study, the review of literature and related studies the following recommendations are made:

1. It is recommended that newly employed county extension agents be provided appropriate preservice and inservice training programs to ensure that they become professionally competent in all areas of professional requirements. Emphasis should be given to the following:

   (a) Understanding structure and function of the organization.

      (i) Relate objectives, philosophy, laws and policies that govern the Cooperative Extension Service.

      (ii) Describe the role of extension directors, division leaders, specialists and county/area extension agents.

      (iii) Relate the significant historical background of Cooperative Extension Service to present programs and situations.

      (iv) Explain the relationship of the county, the area, the Land Grant University and the USDA in conducting Cooperative Extension Service programs.

   (b) Program planning

      (i) Prepare a long range program of work

      (ii) Prepare an annual program of work

   (c) Program evaluation

      (i) Evaluate program accomplishments and identify strengths and weaknesses

      (ii) Evaluate plans of work and understand the relationship of objectives to management

      (iii) Evaluate the performance of the other extension staff

(d) Leadership development

(i) Recognize and describe the social action (diffusion and adoption) process in the community

(ii) Analyze the power structure within the community

(e) Administrative duties

(i) Orient new staff

(ii) Prepare job descriptions

(iii) Select competent staff

(iv) Develop in staff members an understanding of their roles

(v) Describe wage and salary administration

(vi) Explain retirement and insurance policies and procedures

(f) Extension teaching methods

(i) Develop criteria for evaluating various teaching methods

2. County Extension agents need additional formal academic training if they are to be effective team members of the CES. To be more effective at the county level more attention should be given to extension education, educational psychology and other behavioral sciences.

3. It is recommended that professional educators in each state periodically evaluate and update preservice and inservice programs dealing with extension education.

4. Supervisors and administrators in each state vested with responsibilities of recruitment and placement of county extension agents need to keep program objectives of the CES in mind as

they select personnel. Further, employment of personnel should be based on those disciplines relevant to their newly assigned roles.

5. State extension personnel in states where induction training does not exist should offer such supplementary training in order to develop positive attitudes and commitment, to the service of clientele.
6. Adequate funds should be appropriated by each state Cooperative Extension Service in order to promote and strengthen inservice training programs.
7. Research should be conducted in each state to evaluate the degree of technical and professional competence that county agricultural extension agents possess. The outcome should be used by extension administrators, professional educators and supervisors in designating appropriate courses of action necessary for overcoming detected weaknesses.
8. Special efforts are required to prepare prospective agricultural extension agents in the Southern region, to the extent that data provided by the respondents from the Southern region represents the true evaluation of competencies possessed by newly appointed extension employees. It appears that careful consideration needs to be given to preservice and inservice education programs as well as the selection approach.

TABLE 2

NUMBER AND PERCENT OF RESPONSES RELATIVE

TO POSITION AND REGION

REGION	Directors			Presidents			Total		
	Number of Directors	Number of Respondents	Percent of Responses	Number of Presidents	Number of Respondents	Percent of Responses	Number of Respondents	Number of Responses	Percent of Responses
North Central	12	9	75	12	9	75	24	18	75
North Eastern	12	11	92	11	7	64	23	18	78
Southern	13	11	85	13	10	77	26	21	81
Western	13	8	62	13	9	69	26	17	65
Grand Total	50	39	78	49	35	71	99	74	75

TABLE 3

PERCEIVED COMPETENCIES OF NEWLY EMPLOYED COUNTY

AGRICULTURAL EXTENSION AGENTS BY GEOGRAPHIC CATEGORY

Competency Categories (In your Competency Categories)	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n=74	SD
1. Structure and Function of the Organization	1.34	1.39	0.97	1.30	1.14	1.39	1.20	0.42
2. Program Planning	1.90	1.93	1.30	1.82	1.97	1.54	1.97	0.50
3. Program Execution	1.86	1.97	1.66	1.84	1.91	1.74	1.86	0.46
4. Evaluation	1.50	1.73	1.33	1.01	1.31	1.35	1.33	0.47
5. Leadership Development	1.97	1.84	1.39	1.67	1.80	1.98	1.93	0.97
6. Administrative Duties	1.99	1.81	1.36	1.91	1.91	1.48	1.89	0.97
7. Communication Skills	1.99	2.96	1.88	2.13	2.01	1.94	1.98	0.84
8. Extension Teaching Methods	1.74	1.88	1.99	1.84	1.73	1.71	1.73	0.46
9. Community Relations	1.95	2.01	1.92	1.94	1.94	1.91	1.97	0.46
10. Professional Role and Development	2.01	2.29	1.96	2.29	2.22	1.97	2.16	0.51
11. Farm and Home Visits	1.94	2.02	1.81	1.90	1.97	1.80	1.91	0.43

Rating Scale: 0- No Competence, 1-Low Competence, 2- Moderate Competence, 3- High Competence

TABLE 4

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO STRUCTURE AND FUNCTION OF

THE ORGANIZATION

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n=74	SD
1. Can relate objectives, philosophy, laws and policies that govern the Cooperative Extension Service	1.41	1.33	0.77	1.41	1.13	1.39	1.20	0.74
2. Can describe the role of extension director, division leaders, specialists and county/area extension agents	1.85	1.33	1.10	1.76	1.20	1.68	1.46	0.80
3. Can relate the significant historical background of the Cooperative Extension Service to present programs and situations	1.00	0.94	0.86	1.00	1.00	0.89	0.95	0.70
4. Can explain the relationship of the County, the area, the Land Grant University and the USDA in Conducting Cooperative Extension Service Programs	1.29	1.17	1.04	1.35	1.15	1.36	1.20	0.76

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 5

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO PROGRAM PLANNING

Competency Statements	Region NC n=10	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n = 74	SD
1. Can determine program priorities	1.52	1.70	1.10	1.03	1.53	1.50	1.51	0.50
2. Can determine objectives of the County Program	1.63	1.70	1.23	1.53	1.49	1.36	1.52	0.50
3. Can prepare a long range program of work	1.33	1.44	1.00	1.34	1.33	1.18	1.21	0.74
4. Can prepare an annual program of work	1.56	1.61	1.00	1.53	1.41	1.36	1.40	0.72
5. Can help clientele analyze needs and alternative solutions to problems	1.63	2.11	1.32	1.82	1.79	1.99	1.84	0.70
6. Can provide leadership and involve volunteer leader, clientele and advisory groups in planning work	1.75	1.94	1.36	1.99	1.64	1.63	1.64	0.61
7. Can provide facts, principles, concepts and techniques as needed.	1.88	2.22	1.77	2.00	1.97	1.94	1.96	0.03
8. Can involve extension agents, area staff, division leaders/specialists and university staff in program planning.	1.75	1.73	1.50	1.71	1.62	1.71	1.66	0.63

Rating Scale: 0-No Competence; 1-Low Competence 2-Moderate Competence; 3-High Comp.

TABLE 6

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO PROGRAM EXECUTION

Competency Statements	Region NC n=16	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n=74	SD
1. Can assist clientele in organizing and carrying out programs of social and economic importance	1.88	2.06	1.55	1.71	1.87	1.63	1.77	0.61
2. Can follow a calendar of work	2.31	2.22	2.00	2.24	2.26	2.09	2.20	0.39
3. Can use a variety of techniques to influence change in people	1.63		1.59	1.65	1.79	1.50	1.66	0.68
4. Can develop and maintain rapport with the clientele	1.80	1.39	1.91	2.06	2.15	1.94	2.05	0.95
5. Can complete state extension management information systems (SEMIS) reports	1.94	1.89	1.59	1.88	1.82	1.76	1.80	0.86
6. Can involve volunteer leaders and other support groups in executing plans	1.75	1.94	1.59	1.71	1.77	1.68	1.73	0.61
7. Can identify and use early adopters or opinion leaders in extension programs	1.63	1.94	1.41	1.59	1.58	1.50	1.54	0.73
8. Can select appropriate competences for method and result demonstrations	1.82	1.94	1.64	1.88	1.88	1.78	1.82	0.68

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 7

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO EVALUATION

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n=74	SD
1. Can evaluate program accomplishments and identify strengths and weaknesses	1.35	1.54	0.95	1.24	1.30	1.32	1.26	0.64
2. Can evaluate plans of work and understand the relationship of objectives to management	1.29	1.56	1.14	1.29	1.30	1.32	1.21	0.64
3. Can evaluate own performance as an agricultural extension agent	1.65	1.89	1.41	1.65	1.63	1.68	1.65	0.61
4. Can evaluate the performance of other extension staff	1.35	1.50	1.09	1.71	1.38	1.50	1.39	0.70
5. Can develop and conduct surveys	1.99	1.72	1.50	1.88	1.80	1.74	1.86	0.99
6. Can interpret results of surveys	1.99	1.94	1.59	1.99	1.79	1.85	1.82	0.64
7. Can analyze reports	1.71	2.00	1.59	1.88	1.98	1.67	1.78	0.58

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 8

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO LEADERSHIP DEVELOPMENT

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=60	Position P n=14	Overall Mean n = 74	SD
1. Can delegate authority	1.71	1.89	1.36	1.83	1.83	1.61	1.56	0.65
2. Can recognize and describe the social action (diffusion & adoption) process in the community.	1.94	1.93	1.34	1.83	1.96	1.38	1.95	0.71
3. Can analyze the power structure within the community	1.41	1.39	1.27	1.47	1.36	1.32	1.25	0.89
4. Can identify pressure groups within the community	1.85	1.61	1.45	1.65	1.66	1.56	1.50	0.50
5. Can utilize knowledge of interaction of people in groups	1.59	1.61	1.23	1.76	1.70	1.53	1.62	0.36
6. Can identify factors which bring about cohesiveness	1.65	1.72	1.41	1.76	1.60	1.61	1.60	0.64
7. Can use various techniques to motivate clients	1.81	1.89	1.59	2.00	1.83	1.79	1.81	0.39
8. Can identify farm group audiences, the leaders, informal leaders & potential leaders	1.86	1.78	1.45	1.83	1.70	1.66	1.68	0.66
9. Can involve leaders in program determination, solicit their support and assistance in program execution and seek their judgement in evaluation	1.75	1.78	1.36	1.83	1.73	1.68	1.83	0.64
10. Can adequately encourage people to accept key positions of responsibility and provide support they may need to experience satisfaction and leadership growth.	1.83	1.95	1.27	1.99	1.98	1.39	1.80	0.83

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

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TABLE 9

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO ADMINISTRATIVE DUTIES

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can interpret policies and develop procedures for planning, executing evaluating and reporting on educational programs	1.65	1.61	1.32	1.53	1.58	1.52	1.61	0.73
2. Can implement plans by counseling and/or training paraprofessionals and volunteer leaders	1.94	1.76	1.77	1.59	1.85	1.68	1.83	0.69
3. Can accept program direction, guidance and supervision from program specialists and administrative supervisors	2.10	2.33	1.76	2.00	2.15	1.89	2.03	0.62
4. Can develop and operate within an office budget and keep inaccurate financial records	2.19	1.73	1.62	1.94	1.98	1.61	1.76	0.69
5. Can coordinate use of equipment, facilities and resources with office staff	2.35	2.00	1.82	2.00	2.05	1.94	2.00	0.68
6. Can manage time effectively	1.76	1.83	1.32	1.76	1.73	1.35	1.64	0.85
7. Can supervise secretarial and other support staff	1.81	1.61	1.27	1.65	1.83	1.68	1.56	0.82
8. Can conduct staff conferences	1.76	1.61	1.27	1.76	1.55	1.56	1.56	0.80
9. Can orient new staff	1.30	1.50	0.95	1.41	1.30	1.30	1.29	0.78
10. Can prepare job descriptions	1.29	1.33	1.00	1.41	1.13	1.35	1.24	0.75
11. Can select competent staff	1.36	1.67	1.00	1.30	1.31	1.36	1.33	0.77
12. Can develop in staff members an understanding of their roles	1.36	1.44	1.18	1.53	1.44	1.35	1.40	0.72
13. Can describe ways and salary administration	1.24	1.33	1.09	1.24	1.15	1.24	1.19	0.77
14. Can explain retirement and insurance policies and procedures	1.00	1.00	0.73	0.94	0.90	0.88	0.88	0.73

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 10

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO COMMUNICATION SKILLS

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can establish and maintain an effective communication system	1.76	2.00	1.73	2.12	1.90	1.91	1.90	0.98
2. Can recognize and interpret common forms of non-verbal communication	1.82	1.83	1.68	1.76	1.78	1.76	1.77	0.81
3. Can prepare and present effective oral presentations	2.06	1.94	1.91	2.19	2.13	1.88	2.01	0.97
4. Can write well constructed official letters and reports	1.94	1.94	1.64	2.00	1.94	1.79	1.86	0.88
5. Can participate in amicably discussing with fellow professionals	2.10	2.20	1.77	2.31	2.08	2.15	2.11	0.61
6. Can conduct telephone conversations effectively	2.35	2.20	2.05	2.38	2.25	2.15	2.21	0.58

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 11

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO EXTENSION TEACHING METHODS

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can plan, select, develop and utilize appropriate teaching materials and techniques	1.65	1.82	1.50	1.88	1.78	1.61	1.70	0.62
2. Can develop criteria for evaluating various teaching methods	1.47	1.50	1.18	1.65	1.30	1.44	1.36	0.66
3. Can prepare and present new releases for radio and TV programs	1.76	2.06	1.59	1.69	1.70	1.76	1.73	0.66
4. Can prepare and use pertinent audio visual materials	1.71	1.89	1.45	1.94	1.80	1.64	1.73	0.61
5. Can plan, prepare for and conduct applied demonstrations	1.94	2.06	1.45	2.06	1.90	1.82	1.86	0.62
6. Can employ principles of learning in teaching youths and adults	1.88	1.94	1.70	2.06	1.88	1.94	1.90	0.50

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 12

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO COMMUNITY RELATIONS

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can develop and maintain good working relationship with staff at state and county/area level	2.06	2.00	1.91	2.06	2.00	2.00	2.01	0.09
2. Can develop and maintain good working relationships with leaders in agricultural and community organizations	2.00	2.11	1.95	2.06	2.00	2.00	2.03	0.62
3. Can develop and maintain relationships with volunteer leaders and other people involved in extension programs	2.06	2.24	2.05	1.94	2.00	2.06	2.07	0.99
4. Can publicize activities through appropriate channels	2.00	2.11	1.73	1.94	1.88	2.00	1.93	0.34
5. Can inform local officials, constituents and general public of program purposes and goals.	1.65	1.94	1.45	1.88	1.65	1.88	1.77	0.71

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 13

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO PROFESSIONAL ROLE AND DEVELOPMENT

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can recognize and maintain ethical standards of a professional extension agent	2.00	2.00	1.95	2.19	2.23	1.82	2.04	0.73
2. Can participate actively in professional organizations	1.88	2.12	1.95	2.19	2.10	1.94	2.03	0.73
3. Can acquire new professional and technical skills and information needed to keep pace with technological advancement	2.24	2.44	1.95	2.44	2.30	2.18	2.25	0.75
4. Can develop and project a positive self image	2.00	2.22	2.04	2.44	2.30	2.00	2.16	0.60
5. Can establish and maintain a professional philosophy	1.94	2.11	1.91	2.12	2.10	1.85	2.01	0.66

Rating scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

TABLE 14

ASSESSMENT OF PROFESSIONAL EDUCATION COMPETENCIES

PERTAINING TO FARM AND HOME VISITS

Competency Statements	Region NC n=17	NE n=10	S n=22	W n=17	Position D n=40	P n=34	Overall Mean N=74	SD
1. Can make effective instructional visits to homes/farms of clientele	1.94	2.11	2.00	2.00	2.13	1.88	2.01	0.66
2. Can design educational experiences that are appropriate and directed at the objectives of the clientele	1.94	1.83	1.64	1.94	1.93	1.82	1.88	0.61
3. Can identify the characteristics of a potentially successful farming program	1.94	2.11	1.82	2.00	1.97	1.94	1.96	0.62

Rating Scale: 0- No Competence; 1- Low Competence; 2- Moderate Competence; 3- High Competence

BEST COPY AVAILABLE

THE DEVELOPMENT OF A TEACHING CLARITY SCALE FOR BEGINNING TEACHERS OF VOCATIONAL AGRICULTURE

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INTRODUCTION/NEED FOR THE STUDY

"Clarity in teaching" is noted as being a desirable trait for any "good teacher". However, as noted by Cruickshank et. al. (1975), "clear teaching" is a concept which is hard to measure. There is no universally accepted definition of teaching clarity. However, in an effort to define teaching clarity, Cruickshank surveyed 1009 junior high school students and asked them to list the behaviors most often exhibited by their most clear teacher. Subsequent research produced a list of 12 intermediate-inference behaviors most often exhibited by clear teachers (see Appendix A).

The development of an acceptable teaching clarity scale would greatly enhance teacher educators' ability to assist young teachers in becoming better classroom instructors. Data gathered through administering such an instrument could indicate particular areas of undergraduate teaching methods courses needing greater emphasis and/or possible weaknesses that teachers should concentrate on to improve their performance. If proven valid, the teaching clarity scale could be useful as a measure of program effectivness, assuming one could prove a significant change in clarity after completion of a particular course or program.

OBJECTIVE OF THE STUDY

The purpose of this study was to develop a reliable and valid instrument for measuring "teaching clarity" to be used in future research which will attempt to assess the impact of in-class supervision programs upon beginning vocational agriculture teachers.

METHODS AND PROCEDURES

Based upon the categories of intermediate-inference behaviors developed by Cruickshank et. al., a 21-item Likert-type scale was developed to measure teaching clarity as perceived by students enrolled in classes taught by beginning vocational agriculture teachers. Each of the 21 items had a 5-point rating scale beside it; therefore overall scale scores could range from a low of 21 to a high of 105. The instrument was administered to 878 vocational agriculture students enrolled in classes of teachers who had been teaching for three years or less. In order to assure that the teachers would not bias the results of the test, the instrument was administered to the students by either building principals, vocational directors, or university supervisors. All persons who administered the instrument were given identical instructions on how to present the teaching clarity instrument to the students. Each administrator was given a script from which to read directions to the students prior to completing the instrument. Upon completion, the administrators sealed the instruments in envelopes and returned them to the researcher for tabulation.

After tabulation of the data, Cronbach's Alpha Coefficient (cited in Anastasi, 1982, p. 117) was calculated in an effort to measure internal consistency. In an attempt to develop some initial validity data for the scale, three hypotheses were tested concerning possible alternative criteria that students may have been using as they completed the

instrument.

Data Sources

Students were selected from 61 vocational agriculture programs in Illinois, Indiana, Kentucky, New Hampshire, New York, Pennsylvania, Tennessee, and Wisconsin in order to test the instrument. A total of 878 students participated in the study.

RESULTS: FINDINGS, CONCLUSIONS, RECOMMENDATIONS

Reliability

Internal consistency is extremely important to a scale which proposes to measure a homogeneous behavior domain such as teaching clarity. If each item in the scale measures the same concept, its overall rating should positively correlate with the total scale scores. (ie. If a teacher is rated as being "very clear" the rating of each item in the scale should reflect that same idea.) Items which do not correlate strongly, or correlate negatively to the total scale scores are poor items and should be removed. Cronbach's Alpha Coefficient is a measure of inter-item consistency which is appropriate for use in this situation.

The alpha coefficient for the teaching clarity scale was .85. The scale was considered to be acceptable with regard to internal consistency. It was found that each item in the 21-item scale was relatively consistant with the overall scale. No items were deleted (see Table 1).

Table 1. Item-Total Statistics for the Teaching Clarity Scale.

Item Number	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Alpha If Item Deleted
1	76.05	139.86	.8466
2	76.68	138.72	.8498
3	75.36	146.35	.8534
4	75.80	140.09	.8487
5	76.09	138.16	.8458
6	75.89	139.88	.8466
7	75.33	142.74	.8480
8	76.60	148.64	.8617
9	75.8[illegible]	140.67	.8499
10	75.[illegible]6	141.02	.8489
11	75.60	141.64	.8500
12	75.92	138.75	.8443
13	76.01	138.54	.8468
14	76.43	138.71	.8461
15	75.67	137.38	.8448
16	75.89	146.43	.8598
17	75.95	137.30	.8440
18	75.66	136.78	.8409
19	75.86	139.65	.8464
20	75.50	138.47	.8432
21	75.79	137.93	.8431

Alpha=.8543 Standardized Item Alpha=.8593

Validity

Validity data on the scale are inconclusive, to date. However, the scale was presented to a panel of teacher educators and social statisticians prior to administering it in an effort to develop face validity. With minor structural changes, the scale was approved by the panel.

"Face validity" refers to, 1) whether the instrument is really measuring the behavior that the investigator assumes it to measure, and 2) whether it provides an adequate sample of that kind of behavior (Bailey, 1982, p. 70). The latter concern is often a matter of judgement, however there is some recourse in determining if an instrument really measures what it is assumed to measure. By logically ruling out alternative criteria which the scale may be measuring a researcher is improving the plausibility of the scale measuring what it proposes to.

In an effort to gather additional face validity data, the panel suggested that three hypotheses be tested with regard to what students may have been incorrectly perceiving as teaching clarity. It was hypothesized that students may consider their perceptions of the total vocational agriculture program instead of their teacher's ability to teach clearly, as they completed the instrument. In order to test this hypothesis, the clarity perceptions of students enrolled in vo-ag for the first time were compared to the clarity perceptions of students who had been in the program two or more years (assuming students who were more familiar with the program may bias their responses on the clarity scale). Table 2 reports the results of this hypothesis test.

Table 2. Differences in Clarity Scores Given By First Year Students and Students Who Were Enrolled in Vo-Ag for Two or More Years.

Group	N of Cases	$\bar{x}$	sd	t-value
First Year Students	244	79.78	11.26	
Upper Classmen	646	79.57	12.79	.23

p.=.820, df=868

Based upon the data in Table 2 there is no reason to believe that first-year vo-ag students perceive their teacher to teach more or less clearly than students who have been enrolled in vo-ag for two or more years.

It was also hypothesized that students who had been exposed to a different teacher the previous year may perceive teaching clarity for their new teacher differently than those students who had been exposed to only the new teacher. In order to test this hypothesis, a single teacher vo-ag department was selected which had recently hired a new teacher and released an "unsuccessful" teacher from his contract. It was believed that if students who had been exposed to the previous teacher rated the new teacher similarly in clarity to those students who enrolled in the program after the new teacher arrived, validity of the clarity scale would be improved. Table 3 reports the findings from this test.

Table 3. Differences in Clarity Scores Given By Students Who Had Been Exposed to a Different Vo-Ag Teacher the Previous Year and Students Who Had Not Been Exposed to a Different Teacher.

Group	N of Cases	$\bar{x}$	sd	t-value
Students Having Only the New Teacher	19	82.32	12.51	
Students Having a Different Teacher The Previous Year	10	83.40	11.54	.23

p.=.817, df=27

Based upon the data in Table 3 there is no reason to believe that the students who had been exposed to the teacher who had been released from his contract perceived their new teacher's ability to teach clearly any differently than did the students who had not been previously enrolled in the program.

A final hypothesis was tested which did find that there was a significant difference between the teaching clarity ratings given to teachers by students who were "interested in agriculture" and those students who said they were "taking vo-ag because it was an easy grade even though they were not interested in it." As reported in Table 4, students who were not interested in vo-ag rated their teacher's ability to teach clearly an average of eleven points lower than those students who were interested in the vo-ag program. Although the scale remained relatively consistent for both groups (Alpha 1 =.85/Alpha 2 =.82), it could be concluded, based upon the data presented in Table 4, that vo-ag students who are not interested in agriculture may be "biased" in their perceptions of their teacher's ability to teach clearly.

Table 4. Differences in Clarity Scores Given by Students Who Were Interested in Agriculture and Those Given By Students Who Were Not Interested in Agriculture.

Group	N of Cases	$\bar{x}$	sd	t-value
Interested in Ag	790	80.62	11.96	
Not Interested in Ag	67	69.21	13.20	7.44

p.<.001, df=855

Suggestions For Further Research

The clarity scale is believed to have acceptable internal consistency based upon the calculated alpha coefficient. However, ratings for items 8 and 16 which deal with "teaching method used" and "how the teacher handles lack of understanding" (see Appendix B) are slightly less consistant with the overall scale than the other 19 items (see Table 1). If replication substantiates this finding, it would be appropriate to drop those two items from the scale. Although the scale is considered reliable with regard to internal consistency, it is recommended that a test-retest

correlation coefficient be calculated to determine the scale's ability to repeat its findings over time.

Further validation procedures are also considered appropriate. Only face validity is developed for this paper. Alternative measures of teaching clarity must be tested against this scale in an effort to assess criterion-related and construct validity.

Above and beyond the need for the scale to correlate highly with other such measures, the scale should also have discriminant validity. It should not correlate with scales proven to measure other traits. Further study using the clarity scale and other instruments in a "Multitrait-Multimethod Matrix" (cited in Anastasi, pp. 146-150) would resolve questions of convergent and discriminant validity as well as reliability.

Conclusion

Although the teaching clarity scale withstands initial tests of reliability and validity, further research is necessary before it can be said to be a truly "reliable" and "valid" measure. However, until such time as other measures are developed and reliability and validity data are produced, this scale is believed to be acceptable as a measure of teaching clarity.

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APPENDIX A

Intermediate-inference Behaviors
Exhibited by Clear Teachers

Intermediate-inference Behaviors Exhibited by Clear Teachers

1. Providing students with feedback or knowledge of how well they are doing makes things more clear.
2. Teaching things in a related step-by-step manner makes things more clear.
3. Orienting and preparing students for what is to follow makes things more clear.
4. Providing students with standards and rules for satisfactory performance makes things more clear.
5. Using a variety of teaching materials makes things more clear.
6. Repeating and stressing directions and difficult points makes things more clear.
7. Demonstrating makes things more clear.
8. Providing practice makes things more clear.
9. Adjusting teaching to the learner and the topic makes things more clear.
10. Providing illustrations and examples makes things more clear.
11. Communicating so that students can understand makes things more clear.
12. Causing students to organize materials in a meaningful way makes things more clear.

(Cruickshank, Myers, and Moenjak, 1978)

APPENDIX B

Teaching Clarity Scale

_____

STUDENT QUESTIONNAIRE

DIRECTIONS: Please read each of the following 21 statements very carefully. Then check the appropriate box to the right of each statement as it pertains to your vocational agriculture teacher.

KEY: 1 = my vo ag teacher never does this.
2 = my vo ag teacher does this sometime but not often.
3 = my vo ag teacher does this about half of the time.
4 = my vo ag teacher teacher does this most of the time.
5 = my vo ag teacher does this all of the time.

EXAMPLE:

	1	2	3	4	5
0. When I pass my teacher in the hall, he/she will smile and say hello to me.				X	

(By checking box 4, you believe your teacher does this most of the time.)

	1	2	3	4	5
1. Before we start a new unit or lesson in class, our vo ag teacher introduces the lesson with an example we can relate to.					
2. Once we discuss a unit or lesson in class, our vo ag teacher takes us to the shop (or greenhouse or lab) and lets us practice what we've just learned.					
3. Our vo ag teacher uses big words in class that I don't understand and he/she does not explain what they mean.					
4. When we are in the shop (or greenhouse or lab), our vo ag teacher will demonstrate what he/she wants us to do before he/she asks us to do it.					
5. Our vo ag teacher is boring in class.					
6. When we begin a new unit or lesson, our vo ag teacher will spend ample time explaining what we are going to do and why we are going to do it.					

KEY: 1 = my vo ag teacher never does this.
2 = my vo ag teacher does this sometime but not often.
3 = my vo ag teacher does this about half of the time.
4 = my vo ag teacher teacher does this most of the time.
5 = my vo ag teacher does this all of the time.

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7. When we go over new material in class, our vo ag teacher jumps from subject to subject so much that it is hard for me to take notes. 1 2 3 4 5

8. Our vo ag teacher uses the same teaching metnod everyday. 1 2 3 4 5

9. After we finish a unit or lesson and take a test on what we've covered, our vo ag teacher will spend ample time going over the test discussing why the right answers are right and why the wrong answers are wrong. 1 2 3 4 5

10. When we are studying a subject which is complicated, our vo ag teacher will go over the material too rapidly for me to understand. 1 2 3 4 5

11. Our vo ag teacher tells us how we are to be graded in class and we know what is expected of us. 1 2 3 4 5

12. When we cover new material in class, our vo ag teacher repeats it several times until he/she is sure it is completely understood. 1 2 3 4 5

13. If we do not quite finish a unit or lesson on time, our vo ag teacher will re-adjust our schedule so as to finish the unit or lesson before going on. 1 2 3 4 5

14. As we cover material in class, our vo ag teacher will explain something and then give us time to think about what he/she said before moving to the next comment. 1 2 3 4 5

15. When we begin an assignment in the shop (or greenhouse or lab) our vo ag teacher first explains the work to be done and asks us if we have any questions before we begin. 1 2 3 4 5

16. If someone doesn't understand something in class our vo ag teacher will tell the student to get the information from someone who does understand it and then he/she goes on with the lesson. 1 2 3 4 5

KEY: 1 = my vo ag teacher never does this.
2 = my vo ag teacher does this sometime but not often.
3 = my vo ag teacher does this about half of the time.
4 = my vo ag teacher teacher does this most of the time.
5 = my vo ag teacher does this all of the time.

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17. Before we begin to work on an assignment in class, our vo ag teacher will ask if we know what to do and how to get started. 1 2 3 4 5

18. Our vo ag teacher explains things in a way that we can understand them. 1 2 3 4 5

19. Our vo ag teacher covers material either too fast or too slow (not at an appropriate pace). 1 2 3 4 5

20. When I ask a question in class, our vo ag teacher takes the time to answer the question thoroughly before moving on. 1 2 3 4 5

21. When our vo ag teacher explains difficult things in class, he/she will stress the fact that these things are difficult and tells us why it is important that we learn them. 1 2 3 4 5

PLEASE CIRCLE THE APPROPRIATE ANSWER TO EACH OF THE FOLLOWING STATEMENTS ABOUT YOU.

Please do not write in this space

1. My gender (sex) is:
   a. male
   b. female
   1. _____

2. I am in the _____ grade
   a. 8th
   b. 9th
   c. 10th
   d. 11th
   e. 12th
   2. _____

3. I am taking vocational agriculture because:
   a. I am interested in agriculture.
   b. It's an easy grade even though it isn't what I'm interested in.
   3. _____

4. How old are you? _____
   4. _____

A COMPARISON OF AGRICULTURAL MECHANICS COMPETENCIES NEEDED AND COMPETENCIES POSSESSED BY VOCATIONAL AGRICULTURAL TEACHERS IN NEBRASKA

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INTRODUCTION

Forty-six years after the passage of the Smith-Hughes Act, Public Law 88-210, commonly referred to as the Vocational Education Act of 1963, was passed by Congress. It revised the provisions of the 1917 Act reflecting changing societal needs and a new role for vocational agriculture in meeting these needs (U.S. Congress, 1963). In 1966 a new set of national objectives was written for vocational education in agriculture to describe the broadening effect of the 1963 Act.

The need for such change in objectives for vocational agriculture was expressed by Walter M. Arnold, then Assistant Commissioner for Vocational and Technical Education. He stated:

> It also should be understood that educational objectives in vocational agriculture are not static, that changes will be made as needs change. It is the responsibility of every person involved in agricultural education to be constantly alert to changes taking place and to adjust instructional programs accordingly (U.S. Dept. of Health, Education, Welfare, 1966)

Several researchers point out the need for improvement of skills possessed by vo-ag instructors and the development of needed skills by students in the area of agricultural mechanics. Today teachers need to be certain that educational experiences are developing the competencies needed for occupational entry and advancement (Delene, Oliver, 1978).

As Gilman (Gilman, 1957) points out, farmers of today use machines of greater capacities and must become more efficient mechanics. In his article in the "Agricultural Education Magazine," the change from the past generations of agricultural mechanics was discussed with the emphasis placed in the move from simple machines to the present complicated equipment we use today. The author stressed the need for agricultural mechanics employees to follow to completion many farm mechanics skills in today's modern world.

Bear and Solstad (Bear, Solstad, 1966) concluded that present programs do not include enough agricultural mechanics for either school or out-of-school groups. They indicated that teachers need to improve their knowledge and increase their confidence in the subject. Organized training sessions at the post-secondary level have been developed as a result of this study.

If people are going to be trained for occupations requiring mechanical skills, the first concern is to determine the level of mechanical competence needed and possessed by the teacher or the person who is going to train the people for the various occupations.

OBJECTIVES OF THE STUDY

The following are the main purposes or objectives of this study:

1. To determine the degree of competence needed and possessed by teachers of agriculture based on their opinion of their ability to teach these skills and understandings.

2. To determine the effect of teachers age, high school vocational agriculture completed, college training in agricultural mechanics, years taught vocational agriculture and the type of agricultural program, on the needed and possessed level of agricultural mechanics skills, abilities and understandings.

For this paper only information relevant to the first objective is presented.

Courses of organized study in agricultural mechanics for teachers of vocational agriculture are intended to update and inform teachers of vocational agriculture as they prepare to meet the needs of day students or farmers. Many teachers of vocational agriculture have no agricultural mechanics work experience. The course of study will provide needed experience and confidence in the subject. As the need for training in agricultural mechanics is established and met, the question of extent of need for the various skills or abilities arises.

The basic purpose of this investigation was to identify these needs.

METHODS

Instrumentation

A preliminary list of competencies related to agriculture mechanics was developed by the researcher with the aid of Dr. Thomas A. Hoerner, Associate Professor Agricultural Engineering Department, Iowa State University. The competencies were grouped within eight agricultural mechanics areas.

A panel of consultants was asked to assist in selecting the competencies needed by Nebraska Vocational Agriculture instructors. The panel consisted of six representatives from the state vocational agriculture education department, teacher educators from the University of Nebraska, and six Nebraska vocational agriculture teachers. These persons were selected by the researcher with the aid of Dr. Roy D. Dillon, Professor of Agricultural Education. Sixty competencies were selected to be placed in a questionnaire after revisions were completed. A rating scale was provided with a 1 to 99 range, for the sixty competencies.

A 1 to 99 scale was used in this study because it was felt that this scale would give a more accurate picture of the respondents' feelings of importance. A 99 scale also provided increased reliability when the scale values were transformed to normal deviates.

The degree of competence was assessed regarding the importance of sixty competencies in the vocational agriculture program of study, based on the opinion of Nebraska vocational agriculture teachers. The number "1" indicated that the competence was of no importance in the Nebraska agricultural mechanics curriculum; "50" indicated that the competence was of average importance; and "99" indicated that the competence was of utmost importance in the curiculum. Secondly, instructors were asked to respond to the sixty competencies in terms of their opinion of their level of ability to teach each competency. The number "1" indicated the teacher believed he had no ability to teach this competency; "50" indicated the teacher believed he had an average ability to teach this competence; and "99" indicated that the teacher believed he strongly possessed the ability to teach the competency.

Data Source

For the purpose of this study, a random sample of 48 was selected from the 136 school districts in the state of Nebraska with vocational agriculture programs. The vocational agriculture departments were selected from each of the eight supervisory districts. It was felt that this sample size would provide a sufficient sample, yet was not prohibitive in terms of time involved and cost during data collecting.

RESULTS

Hypotheses were tested using the inferential statistics, ANOVA and data was also examined using basic descriptive statistics of means and percentage.

The finding showed a significant difference between the mean level of needed competency and possessed level for seven of the sixty competencies. Seven competencies had a lower level of "need" than "possessed." The seven competencies were:

1. Operate a carbon torch
2. Measure, cut and putty glass panes
3. Ream and countersink hole
4. Read a micrometer
5. Operate and maintain a gas forge
6. Solder electrical connections
7. Identify and inventory hand tools

Of the eight competencies found to be significantly different, one competency (select arc welding electrodes) was found to have a higher level of competency needed than competency possessed.

The remaining seven competences had a lower level of competency needed than possessed.

(As mentioned earlier) In the study 47 of the 60 competences, had a lower "needed" competence level than the mean "possessed" competency level. Five competencies were rated as having a mean level of "needed" competence of 85 or higher. In descending order these included:

		Mean Scores
1.	Attach and adjust guages and regulator for gas welding.	90.5
2.	Make common welds in four positions (flat, horizontal, vertical, and overhead).	87.4
3.	Braze weld and cut metal with oxy-acetylene.	87.5
4.	Select proper flux rods and tips for gas welds.	86.6
5.	Operate and maintain power grinder, hacksaw and portable grinder.	85.2

The four competencies rated as having the lowest mean level of "needed" competency are listed below in ascending order:

		Mean
1.	Operate and maintain a metal lathe.	29.7
2.	Operate and maintain a wood lathe.	35.8
3.	Operate and maintain a gas forge.	39.7
4.	Operate a carbon torch.	47.9

The five competencies rated as having the highest level of competency "possessed", in a descending order were:

		Mean
1.	Attach and adjust guages and regulators for gas welding.	89.8
2.	Braze weld and cut metal with oxy-acetylene.	87.3
3.	Fusion weld with oxy-acetylene.	87.2
4.	Select proper flux rods and tips for gas welding.	86.6
5.	Operate and maintain power grinder, hacksaw and portable grinder.	85.1

The four competencies rated by teachers as having the lowest level of "possessed" competency, in ascending order included:

1. Operate and maintain a metal lathe.
2. Operate and maintain a wood lathe.
3. Operate and maintain a gas forge.
4. Operate and maintain a TIG and MIG welding machine.

An inspection of Table 1 reveals the mean degree of agriculture mechanics competencies needed and possessed by skill groups. The level or degree was measured with a 1-99 point scale, with "1" indicating no need and "99" indicating very much needed. The skill group rated as the highest degree of "need" and highest degree of competence "possessed" was hot and cold metals, with a mean rating of 82.6 and 84.6 respectively. The skill group carpentry construction was rated as the least degree of competence "needed" with a mean score of 56.7, and degree of competence "possessed" with a mean score of 62.1. The greatest point spread between "needed" and "possessed" competence was also found in the carpentry construction skill group with a difference of 6.4 points. The skill group, arc welding, had the least difference between degree "needed" and "possessed" competence of 1.5 points.

Also noted in Table 1 is that the scores for the "need" were lower than the "possessed" for all five skill areas.

TABLE 1

MEAN LEVEL OF AGRICULTURAL MECHANICS COMPETENCE NEEDED AND POSSESSED FOR 48 TEACHERS OF VOCATIONAL AGRICULTURE BY SKILL GROUP

Level	Arc Welding	Oxy-Acetylene	Carpentry Construction	Hot and Cold Metals	Tool Maintenance and Selection
Needed	65.4	63.2	56.7	82.6	66.1
Possessed	66.9	65.6	62.1	84.6	69.2
Difference	1.5	2.4	6.4	2.0	3.1

Data in Table 2 shows the mean weeks of instruction in the five major agricultural mechanics areas studied. Arc welding and oxy-acetylene were both taught for an average of 13 weeks; time of instruction ranged from two weeks to 70 weeks in both areas. The 48 teachers in the survey taught an average of 6.5 weeks of instruction in the area of carpentry construction, with a range of from 0 to 60 weeks. The two least taught areas were hot and cold metals with 4.3 weeks of instruction, and tool selection and maintenance with an average of only 3.0 weeks of instruction.

TABLE 2
NUMBER OF WEEKS TEACHING FIVE MAJOR AGRICULTURAL MECHANICS AREAS IN 48 VOCATIONAL AGRICULTURE PROGRAMS

Instructional Area	Mean Number of Weeks of Instruction	Range (Number of Weeks)
Arc Welding	13.0	2-70
Oxy-Acetylene	13.0	2-70
Carpentry Construction	6.5	0-60
Hot and Cold Metals	4.3	0-50
Tool Maintenance & Selection	3.0	0-18

EDUCATIONAL IMPORTANCE OF THIS STUDY

Some implications determined as a result of the study are:

1. Vo-ag teachers in the state of Nebraska were over emphasing the area of hot and cold metal work, and arc and oxy-acetylene welding.

2. Vo-ag teachers in the state of Nebraska needed to incorporate more instruction in carpentry construction into their day class curriculum.

3. Teacher educators at the University of Nebraska identified the need for a carpentry construction class at the university. They should be developed as a part of the undergraduate progam for agricultural education majors.

The findings of the study relate to a significant portion of an agricultural production curriculum--the agricultural mechanics component. State departments and teacher education programs continually need to determine what is needed in the local program and how well teachers are prepared to deliver what is needed. Research studies such as this provide information needed to update teacher education programs and provide a basis for state departments planning inservice activities.

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VOCATIONAL AGRICULTURE/AGRIBUSINESS EMPLOYMENT NEEDS ASSESSMENT IN ST. MARY'S, CHARLES, CALVERT AND ANNE ARUNDEL COUNTIES, MARYLAND

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INTRODUCTION

The changing structure of American agriculture and expansion of agribusiness has created a demand for accurate up-to-date information on occupations in agriculture. Birdsall concludes that current occupational employment data in the agriculture industry is not adequate. He further concludes that no data collection program offered by the Department of Labor or other State or Federal agencies can currently fill the information gap. Reliable data on occupations requiring agricultural competencies across industries are crucial for planning purposes (Birdsall, 1980:1).

Due to continuous advancement of technology in agriculture, there is a need for continuous expansion and revision of competencies for employment in the agriculture/agribusiness occupations. The agriculture employment needs assessment is a technique that is useful to determine the changes in occupational needs and is, therefore, useful for adjusting curriculum in public school programs to meet the industry needs in agriculture. The Maryland Department of Education and the Department of Agricultural and Extension Education, University of Maryland, College Park, Maryland, are conducting research studies on the Eastern Shore, Southern, Central and Western Maryland areas to assess the employment needs of Maryland agriculture/agribusiness industry.

A 1982 study conducted by Boyd J. Michael, Washington County, Maryland was one of the most recent and well conducted studies of agricultural employment needs in Maryland. The study consisted of surveys of farmers and agribusiness employers in Washington County and was intended to be a model for studies in other counties. A 50% random sample of farmers was surveyed in that county. Similarly, a survey of all agribusinesses, with follow-up by telephone calls of non-respondents included 162 agribusiness respondents.

Both the farm and agribusiness employers in Washington County indicated "works regularly and on time" was the employee characteristic of top priority. Eighty-five percent of employers hired people with satisfactory agricultural knowledge and skills. Fifty-two percent of employers "always" or "sometimes" hired students with high school agricultural background.

Findings of the study indicated approximately 1,736 full-time and 1,619 part-time agricultural employees in Washington County, Maryland in 1982. By using extrapolation, it was concluded there were approximately 3,335 agricultural employees. Projections provided by the respondents indicated the number of employees in agribusiness and on farms would remain constant or increase slightly over a five-year period through 1987. The rate of turnover was estimated to be 2 percent (Michael, 1982).

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the employment and entrepreneurship needs for vocational education in agriculture in Anne Arundel, Calvert, Charles and St. Mary's counties. Such a study is needed to identify the number of current and future workers in positions which require agricultural competencies. From employment trend information, vocational agriculture/agribusiness programs can be revised to provide skills needed for employment in the agriculture/agribusiness industry. While the study included farm and nonfarm agricultural employment, only the nonfarm study is reported here due to space limitations.

Specifically, the objectives were as follows:

1. To determine the number of persons employed in agribusiness.
2. To determine the number of positions in agribusiness in the next five years.
3. To determine the number of persons needed as replacements in agribusiness.
4. To determine employer satisfaction with agricultural workers.
5. To determine the extent of employment of workers with formal education in agriculture.

PROCEDURES

The classification of businesses and agencies with employees needing agricultural competencies was taken from the Michael study (Michael, 1982). All businesses and agencies listed under the respective headings in the telephone directories for the counties were recorded and cross checked to avoid duplication. The listing was then checked against other directories and sources in an effort to identify every business and agency with employees needing agricultural competencies.

The researcher maintained a record or list of assigned numbers on forms to correspond with the participant responses. The cover letter and the survey instrument was accompanied by a postage-paid return envelope. A telephone or on-site visitation was used as a follow up for those who did not respond after two weeks.

A classification of Agricultural Divisions, Subdivisions and Job Titles was developed and used to classify the positions or jobs reported by respondents in the Agribusiness/Industry Survey. The coding

instructions developed in the Michael study were refined to accommodate the minor changes that had been made in the Agricultural Business/Industry Survey instrument (Appendix A). These were used to code the data for the computer coding sheets that were used by keypunch operators to place the information on computer cards.

The Statistical Package for Social Sciences (SPSS) at the University of Maryland Computer Center was used to analyze the data. Frequencies and percentages were computed on the returns from agribusiness surveys by county. Numbers of agribusiness employers in each of the eight divisions of agriculture, position or title of person completing the agribusiness survey by division in each county and opinions of agribusiness employers concerning attitudes and competencies of their employees were summarized.

RESULTS

Part I - St. Mary's County

Data are presented in detail for St. Mary's County as an example of how the study was conducted and the data analyzed. St. Mary's is a mid to small sized county based on numbers of employers and employees.

There were 56 agribusinesses identified in St. Mary's County. Of these, 22 or 39% responded by mail. The remaining 61% responded when contacted by telephone or personal conference follow up. The return rate was 100%.

Types of Businesses

Each agribusiness was classified into one of eight agricultural divisions by the respondent. The division "production agriculture" accounted for one or 1.8% of the employers. "Supplies and services" accounted for seventeen or 30.3% of the employers; "agricultural mechanics" accounted for 3 or 5.4%; "agricultural products," 1 or 1.8%; "horticulture," 15 or 26.8%; "renewable natural resources," 1 or 1.8%; "forestry," 1 or 1.8%; and "other agriculture," 17 or 30.3%.

Position

Respondents completing the survey were to indicate his or her position held in the agribusiness firm. Of the 56 responses, 42 or 75% were by owners and 8 or 14.3% were by the manager. The remaining ones were by other employees.

Classification of Employers

The data were summarized under eight major agricultural divisions based upon the classification of the employer.

Employers in Horticulture reported a total of 125 employees, the largest number in the eight divisions. This was followed by Agricultural Supplies and Services with 102; Other Agriculture, 31; Agricultural Mechanics, 14; Renewable Natural Resources, 13; Agricultural Products, 5; Forestry, 4; and Production Agriculture, 1.

Employees Clustered by Function

It is useful to examine the data for employees with common functions across division lines. In this regard, it was found that workers cluster in function from laborer to professional. Of the 295 employees, 226 could be grouped by function in 9 categories. These are Laborer, 61; Clerk/Bookkeeper, 28; Foreman/Manager, 24; Secretary, 22; Floral Designer, 22; Deliveryman, 19; Mechanic, 18; Professionals requiring B.S. to Ph.D. degrees, 17; and Owner, 15. The number of "owners" is relatively small because most were classified in other job titles.

Job Titles

The employees were found in 67 different job titles. A breakdown of the number of current employees, by job title, and by full-time or part-time employment status is provided in Table 1. Further, the number of employees projected by employers for each job title one year and five years from 1983 are presented. The projections for most divisions indicate stability in the future number of employees except Horticulture. There, an increase of 17 workers or 14% was indicated. A summary of employee numbers is presented in Table 2.

Most jobs were in Horticulture, Agricultural Supplies and Services or Other Agriculture. These were filled by 295 full-time current workers and 22 part-time workers. A summary of numbers of job titles, current employees and percentage of total agribusiness employees, by division, is presented in Table 3.

Attitudes and Competencies

Most of the agribusiness employers were apparently satisfied with the work attitudes and competencies of the people they employed. Ninety-eight percent indicated either "always" or "sometimes" to the statement, "The people I hire have positive work attitudes." And, 91.1% indicated either "always" or "sometimes" to the statement, "The people I hire have satisfactory agricultural knowledge and skills for my business."

However, a majority of the agribusiness employers felt that their employees were apparently not getting their attitudes and competencies from formal education in agriculture. To the statement, "I hire employees who have completed vocational agriculture in high school with no additional "education," 97% indicated either "sometimes" or "seldom." To the statement, "I hire employees who have a least two years of college training in agriculture," 68.9% said "never." A summary is presented in Table 4.

Part II - Multicounty Comparisons

Detailed studies were made which yielded data by division and job title for full-time and part-time workers, both current and projected, for each of seven counties in Maryland. These included Washington

(Michael, 1982); Carroll and Howard (Gillus, 1985); and Anne Arundel, Calvert, Charles and St. Mary's (Harrod, 1984). Some comparisons of the latter four counties will be presented here, since they collectively comprise a region known as Southern Maryland.

Of the four counties, Anne Arundel contained the largest number of employers and employees. Its proximity to the Baltimore and Washington, D.C. population centers probably explains this predominance of agribusiness firms and employees. The numbers of employers for the four counties were Anne Arundel, 232; Calvert, 28; Charles, 62; and St. Mary's, 56; with a regional total of 378.

Full-Time Workers

The numbers of current full-time workers needing agricultural competencies were Anne Arundel, 1,164; Calvert, 194; Charles, 304; and St. Mary's, 295; with a regional total of 1,957. Of those 1,957 full-time workers, 795 or 41% were in Agricultural Supplies and Services, 788 or 40% in Horticulture, 114 or 6% in Other Agriculture, 88 or 5% in Agricultural Mechanics, 59 or 3% in Production Agriculture, 45 or 2% in Agricultural Products, 41 or 2% in Forestry, and 27 or 1% in Renewable Natural Resources, Table 5.

Part-Time Workers

The numbers of current part-time workers needing agricultural competencies were Anne Arundel, 42; Calvert, 20; Charles, 79; and St. Mary's, 18; with a regional total of 159. Of those 159 part-time workers, 65 or 41% were in Horticulture, 42 or 26% in Agricultural Products, 36 or 23% in Agricultural Supplies and Services, 9 or 6% in Other Agriculture, 5 or 3% in Agricultural Mechanics and 2 or 1% in Production Agriculture, Table 6.

All Workers

The numbers of full-time plus part-time workers needing agricultural competencies were Anne Arundel, 1,206; Calvert, 214; Charles, 383; and St. Mary's, 313; with a regional total of 2,116. Of those 2,116 workers, 853 or 40% were in Horticulture, 831 or 39% in Agricultural Supplies and Services, 123 or 6% in Other Agriculture, 93 or 4% in Agricultural Mechanics, 87 or 4% in Agricultural Products, 61 or 3% in Production Agriculture, 41 or 2% in Forestry and 27 or 1% in Renewable Natural Resources, Table 7.

Employee Attitudes and Agricultural Competencies

Respondents to the survey were predominately owners or managers. In addition to the numbers of workers in their business, they were asked to react to four questions regarding their employees. Two questions related to employee attitudes and skills and two questions addressed employees formal education in agriculture. The responses appeared fairly consistent from county to county, so they are reported here by region.

To the statement, "The people I hire have positive work attitudes," 251 or 78% responded "always," 65 or 20% "sometimes," 7 or 2% "seldom" and 0 "never." To the statement, "The people I hire have satisfactory agricultural knowledge and skills for my business," 146 or 47% responded "always," 131 or 42% "sometimes," 32 or 10% "seldom," and 3 or 1% "never."

To the statement, "I hire employees who have completed vocational agriculture in high school," 18 or 6% responded "always," 81 or 26% "sometimes," 170 or 55% "seldom," and 43 or 14% "never." To the statement, "I hire employees who have at least two years of college training in agriculture," 20 or 7% responded "always," 46 or 15% "sometimes," 53 or 17% "seldom," and 187 or 61% "never," Table 8.

CONCLUSIONS

1. Non-farm agribusinesses and agencies can be classified appropriately into the eight divisions used.

2. There are a minimum of 67 job titles in non-farm agribusinesses in St. Mary's and other counties where incumbents need agricultural competencies.

3. Job titles that have comparatively large numbers of incumbents in Southern Maryland counties are: clerk, deliveryman, floral designer, laborer, manager, mechanic, owner, and secretary.

4. Many job titles have from 1 to 10 workers per county.

5. Each county has a minimum of 30-35 workers in positions that are inherent to the structure who need college degrees in agriculture.

6. About 2/3 of the positions and ½ of the employers are in Agricultural Supplies and Services, and Horticulture.

7. Most agribusiness employers are satisfied with the work attitudes of their employees.

8. Most agribusiness employers are satisfied with the agricultural knowledge and skills of their employees.

9. Seventy-five percent of the employers seldom or never hire employees who completed high school vocational agriculture.

10. Sixteen percent said they sometimes or always hire employees with at least two years of training in agriculture.

11. The number of positions in Southern Maryland projected for the next one and five years appear to be fairly stable.

12. The best estimate of turnover in workers on a yearly basis is 2% of the total.

RECOMMENDATIONS

1. Vo-Ag programs should focus on skills needed in Agricultural Supplies and Services and in Horticulture.

2. Vo-Ag programming should provide student access to training in clerical, managerial and entrepreneurial skills.

3. Vo-Ag programs should provide basic skills in agricultural mechanics and encourage some students to specialize in the field.

4. Thought should be given to specialized programs in floral design and related skills in St. Mary's County.

5. Some students in Vo-Ag should also take college preparatory programs and pursue degrees in various fields of agriculture to meet future needs.

6. Thought should be given to short courses in agriculture for business students pursuing clerical and secretarial positions.

7. Additional studies should be made to determine why agribusiness employers are not hiring more Vo-Ag graduates.

8. Similar studies should be made in all counties of Maryland for state and local planning in educational and in agriculture.

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TABLE 1

Numbers of Agribusiness Employers and Employees by Job Title
in St. Mary's County Maryland 1983

Job Title	Full-time Employees			Part-time Employees		
	Current	Projected One Year	Projected Five Years	Current	Projected One Year	Projected Five Years
Production						
Animal Science Other				2	2	2
Production Manager	1	1	1			
Total	1	1	1	2	2	2
Number of Employers = 1						
Supplies and Services						
Sales Clerk	7	7	5			
Owner	2	2	2			
Deliveryman	13	13	13		3	3
Assistant Manager	4	4	4			
Parts Salesman	4	4	3			
Spray Truck Driver	6	6	7			
Bookkeeper	9	8	8			
Warehouse Worker	5	6	8			
Exterminator	2	1	2			
Owner	8	8	8			
Manager	12	12	12			
Maintenance Mechanic	4	4	4	1		
Laborer	4	5	5	2	3	4
Fertilizer	3	3	3	1		
Foreman Warehouse	1	1	1			
Secretary	2	2	2			
Accountant	1	1	1			
Truck Mechanic	9	10	10			
Service Manager	3	2	2			
Mechanic Helper				1	1	2
Chemist	3	3	3			
Total	102	102	103	5	7	9
Number of Employers = 17						

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TABLE 1 (continued)

Numbers of Agribusiness Employers and Employees by Job Title
in St. Mary's County Maryland 1983

Job Title	Full-time Employees			Part-time Employees		
	Current	Projected One Year	Projected Five Years	Current	Projected One Year	Projected Five Years
Agricultural Mechanics						
Owner	3	3	3			
General Mechanic	2	2	3			
Manager	1	1	1			
Lawn Mower Mechanic	7	3	3			
Welder	1	1	1			
Total	14	10	12	0	0	0
Number of Employers = 3						
Agricultural Products						
Manager	1	1	1			
Assistant Manager	1	1	1			
Warehouseman	2	3	5	2	3	4
Foreman Warehouse	1	1	1			
Total	5	6	8	2	3	4
Number of Employers = 1						

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TABLE 1 (continued)

Numbers of Agribusiness Employers and Employees by Job Title
in St. Mary's County Maryland 1983

Job Title	Full-time Employees			Part-time Employees		
	Current	Projected One Year	Projected Five Years	Current	Projected One Year	Projected Five Years
Horticulture						
Owner	10	14	14			
Salesman	2	2	2	2	2	
Director	1	1	1			
Deliveryman	6	6	6	2	4	4
Floral Designer	22	24	17	2	4	4
Bookkeeper	3	3	3			
Greenhouse Grower	1	1	1			
Laborer	57	60	77	2	0	
Foreman	4	1	2			
Manager	5	5	5			
Greenhouse Technician	1	1	1			
Secretary	1	1	1			
Horticulture Therapist	1	1	1			
Assistant Manager	1	1	1			
Maintenance Mechanic	1	1	2			
Clerk	9	9	9			
Total	125	131	143	8	10	8
Number of Employers = 15						
Renewable Natural Resources						
Resource Manager	1	1	1			
Park Foreman	2	2	2			
Park Maintenance	5	5	6			
Park Guard	1	1	1			
Park Ranger	3	3	3			
Superintendent	1	1	1			
Total	13	13	14	0	0	0

TABLE 1 (continued)

Numbers of Agribusiness Employers and Employees by Job Title
in St. Mary's County Maryland 1983

Job Title	Full-time Employees			Part-time Employees		
	Current	Projected One Year	Projected Five Years	Current	Projected One Year	Projected Five Years
Forestry						
Foresters	1	1	1			
Assistant Foresters	3	3	3			
Total	4	4	4	0	0	0
Number of Employers = 1						
Other Agriculture						
Veterinarian	4	4	4			
Secretary	10	11	11			
Program Assistant	4	4	4			
County (FHA) Supervisor	1	1	1			
County Exec. Direct. (ASCS)	1	1	1			
Dist. Soil Conservationist	1	1	1			
Johnsongrass Supervisor				1	1	2
General Manager (FCS)	1	1	1			
Office Manager	1	1	1			
Vo-Ag Teacher	4	4	4			
County Extension Agent	2	2	2			
4-H Agent	2	2	2			
Total	31	32	32	1	1	2
Number of Employers = 9						

TABLE 2

Numbers of Employees in Agribusinesses, by Division,
in St. Mary's County Maryland 1983

Division	Full-time Employees			Part-time Employees		
	Current	Projected One Year	Projected Five Years	Current	Projected One Year	Projected Five Years
Production Agriculture	1	1	1	2	2	3
Ag. Supplies/Services	102	102	103	5	7	9
Agricultural Mechanics	14	10	12			
Agricultural Products	5	6	8	2	3	4
Horticulture	125	131	143	8	10	8
Renewable Natural Resources	13	13	14			
Forestry	4	4	4			
Other Agriculture	31	132	32	1	1	2
Total	295	299	317	18	23	26

Number of Employers = 56

TABLE 3

Numbers of Job Titles, Current Employees and Percent of Total Employees
in Agribusinesses, by Division, in St. Mary's County Maryland 1983

Division	Number of Identified Job Titles	Total Number of Current Employees		Percent of Total Agribusiness Employees	
		Full-time	Part-time	Full-time	Part-time
Production Agriculture	2	1	2	.3	11.1
Agricultural Supplies/Services	19	102	5	34.8	27.8
Agricultural Mechanics	5	14	0	4.7	0 0
Agricultural Products	4	5	2	1.7	11.1
Horticulture	16	125	8	42.7	44.3
Renewable Natural Resources	6	12	0	4.1	0.0
Forestry	2	4	0	1.3	0.0
Other Agriculture	13	31	1	10.5	5.6
Total	67	295	18	100.0	100.0

Number of Employers = 56

TABLE 4

Opinions of Agribusiness Employers Concerning Attitudes and Competencies of Their Employees in St. Mary's County Maryland 1983

Opinion	Divisions: Production	Sup/Ser	Mechanics	Products	Horticulture	Ren.Nat.Res.	Forestry	Other Ag.	Total/%	
STATEMENT - The people I hire have positive work attitudes.										
Always	1	14	4	1	12	1	1	5	38	79
Sometimes		2			2		1	4	9	19
Seldom		1							1	2
Never									48	100
STATEMENT - The people I hire have satisfactory agricultural knowledge and skills for my business.										
Always		9	4				1		14	31.1
Sometimes	1	5		1	13	1		6	27	60
Seldom		3			1				4	8.9
Never									45	100
STATEMENT - I hire employees who have completed vo-ag in high school with no additional education.										
Always										
Sometimes		3			2			3	11	23.4
Seldom	1	13	3	1	10	1	1	5	35	74.5
Never		1							1	2.1
									47	100
STATEMENT - I hire employees who have at least 2 years of college training in agriculture.										
Always							1	1	2	4.4
Sometimes		1			1			3	5	11.1
Seldom		1			2	1		3	7	15.6
Never	1	14	4	1	10			1	31	68.9
									45	100

TABLE 5

Numbers of Full-Time Workers in Agribusinesses by Division
in the Southern Region of Maryland 1983

Division	County				Regional	
	Anne Arundel	Calvert	Charles	St. Mary's	Total	%
Production Agriculture	26	0	32	1	59	3.01
Agricultural Supplies/Services	506	100	87	102	795	40.62
Agricultural Mechanics	52	4	18	14	88	4.50
Agricultural Products	5	24	11	5	45	2.30
Horticulture	508	37	118	125	788	40.27
Renewable Natural Resources	8	4	2	13	27	1.38
Forestry	28	4	5	4	41	2.10
Other Agriculture	31	21	31	31	114	5.83
Total	1164	194	304	295	1957	100.00
Number of Employers	232	28	62	56	378	

TABLE 6

Numbers of Part-Time Workers in Agribusinesses by Division
in the Southern Region of Maryland 1983

Division	County				Regional	
	Anne Arundel	Calvert	Charles	St. Mary's	Total	%
Production Agriculture	0	0	0	2	2	1.26
Agricultural Supplies/Services	17	6	8	5	36	22.64
Agricultural Mechanics	2	3	0	0	5	3.14
Agricultural Products	0	4	36	2	42	26.41
Horticulture	22	6	29	8	65	40.88
Renewable Natural Resources	0	0	0	0	0	--
Forestry	0	0	0	0	0	--
Other Agriculture	1	1	6	1	9	5.66
Total	42	20	79	18	159	100.00
Number of Employers	28	62	56	378		

TABLE 7

Numbers of Full-Time and Part-Time Workers in Agribusinesses by Division in the Southern Region of Maryland 1983

Division	County				Regional	
	Anne Arundel	Calvert	Charles	St. Mary's	Total	%
Production Agriculture	26	0	32	3	61	2.88
Agricultural Supplies/Services	523	106	95	107	831	39.27
Agricultural Mechanics	54	7	18	14	93	4.40
Agricultural Products	5	28	47	7	87	4.11
Horticulture	530	43	147	133	853	40.31
Renewable Natural Resources	8	4	2	13	27	1.28
Forestry	28	4	5	4	41	1.94
Other Agriculture	32	22	37	32	123	5.81
Total	1206	214	383	313	2116	100.00
Number of Employers	232	28	62	56	378	

TABLE 8

Opinions of Agribusiness Employers Concerning Attitudes and Competencies of Their Employees in Southern Maryland 1983

	Anne Arundel		Calvert		Charles		St. Mary's		Total	
	N	%	N	%	N	%	N	%	N	%
STATEMENT - The people I hire have positive work attitudes.										
Always	143	76.3	26	86.7	44	76.0	38	79.0	251	77.7
Sometimes	41	22.0	3	10.0	12	21.0	9	19.0	65	20.1
Seldom	3	1.5	1	3.3	2	3.0	1	2.0	7	2.2
Never	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	187	100.0	30	100.0	58	100.0	48	100.0	323	100.0
STATEMENT - The people I hire have satisfactory agricultural knowledge and skills for my business.										
Always	85	48.0	18	58.0	29	49.0	14	31.1	146	46.7
Sometimes	69	39.0	11	35.5	24	41.0	27	60.0	131	48.0
Seldom	20	11.3	2	6.5	6	10.0	4	8.9	32	10.3
Never	3	1.7	0	0.0	0	0.0	0	0.0	3	1.0
	177	100.0	31	100.0	59	100.0	45	100.0	312	100.0
STATEMENT - I hire employees who have completed vocational agriculture in high school.										
Always	16	9.0	1	3.4	1		0	0.0	18	5.8
Sometimes	31	17.0	14	48.3	25	45.0	11	23.4	81	26.0
Seldom	97	54.0	9	17.2	29	52.0	35	74.5	170	54.5
Never	35	20.0	5	31.0	2	3.0	1	2.1	43	13.7
	179	100.0	29	99.9	57	100.0	47	100.0	312	100.0
STATEMENT - I hire employees who have at least two years of college training in agriculture.										
Always	12	6.7	3	9.7	3	5.0	2	4.4	20	6.5
Sometimes	28	16.1	5	16.1	8	14.0	5	11.1	46	15.0
Seldom	30	17.2	5	16.1	11	20.0	7	15.6	53	17.3
Never	104	60.0	18	58.1	34	61.0	31	68.9	187	61.2
	174	100.0	31	100.0	56	100.0	45	100.0	306	100.0

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AGRICULTURAL BUSINESS/INDUSTRY SURVEY

1. Position or title of person completing this form _____
2. Phone where you may be reached if clarification is needed _____
3. Check below the division or divisions that apply to your business. Then, **BRIEFLY indicate the major products and/or functions** of your business under each.

_____ a. **Production agriculture** (field crops, grains, livestock, dairy, etc.)

_____

_____

_____ b. **Agricultural supplies/service** (feed, seed, equipment, chemicals, etc).

_____

_____

_____ c. **Agricultural mechanics** (repairs, equipment, buildings, machinery, etc.)

_____

_____

_____ d. **Agricultural products** (processing, marketing, distribution, inspection, buying, etc.)

_____

_____

_____ e. **Horticulture** (greenhouse, landscaping, fruit, vegetable, turf, floristry, etc.)

_____

_____

_____ f. **Renewable natural resources** (parks, conservation, sanitation, fish, wildlife, environmental, etc).

_____

_____

_____ g. **Forestry** (logging, Christmas tree growing, timber buyer, posts, etc.)

_____

_____

_____ h. **Other agriculture** (agriculture teacher, Extension agent, entomologist, scientist, veterinarian, etc.)

_____

_____

4. What is your opinion concerning the attitudes and competencies of the people you hire? Please *circle* the response that best reflects your opinion for each item below.

	(4)	(3)	(2)	(1)
a. The people I hire have positive work attitudes.	Always	Sometimes	Seldom	Never
b. The people I hire have satisfactory agricultural knowledge and skills for my business.	Always	Sometimes	Seldom	Never
c. I hire employees who have completed vocational agriculture in high school.	Always	Sometimes	Seldom	Never
d. I hire employees who have completed at least 2 years of college training in agriculture.	Always	Sometimes	Seldom	Never
e. I hire employees who have completed 4 or more years of college training in agriculture.	Always	Sometimes	Seldom	Never

Please proceed to the back page.

5. Please list the **different job titles** for all workers in your business or agency who need agriculture competencies. Provide the information requested in each column. Agricultural competencies include knowledge and skills in Production Agriculture, Agricultural Supplies/Services, Agricultural Mechanics, Agricultural Products, Horticulture, Renewable Natural Resources, Forestry or other competencies related to the broad industry of agriculture. Include office and field staff workers if they need "agricultural competencies" to do their jobs well. Be sure to include "owner" as a job title. Do not list the same person twice, but use fractions to account for a person covering more than one job title.

	A. Full Time Employees				B. Part-Time Employees			
Job Title (1)	Current Number (2)	Total Estimated Number Needed 1 Year From Now (3)	Total Estimated Number Needed 5 Years From Now (4)	Estimated Number of Replacements Needed Per Year (5)	Current Number (6)	Total Estimated Number Needed 1 Year From Now (7)	Total Estimated Number Needed 5 Years From Now (8)	Estimated Number of Replacements Needed Per Year (9)
Ex. 1 PARTS SALESMAN*	2	2	3	1 2	1	1	1	2
Ex. 2 MACHINERY MECHANIC	6	5	5	1	1	0	0	0
TOTALS								

*EXPLANATION OF THE EXAMPLES.

Example 1. PARTS SALESMAN Figures for the above example indicate 2 full-time partsmen now (column 2), 2 are expected to be on the job 1 year from now (column 3), an expansion from 2 to 3 will occur by 5 years from now (column 4), an average of 1 replacement needed every other year (column 5) (1 person every 2 years equals 1 2 per year).

Further, the figures reflect 1 part-time partsman now (column 6), 1 expected 1 year from now (column 7), 1 expected 5 years from now (column 8), and an average yearly replacement of 2 per year (column 9). This would suggest an average tenure of 6 months for the part-time partsmen.

Example 2. MACHINERY MECHANIC This example indicates a decrease of 1 full-time mechanic from the current year and an average replacement rate of 1 per year.

Further, it shows intention to eliminate the part-time position and not hire any part-time replacements in the next 5 years.

Explain any special seasonal variations _____

Other comments to clarify the information given _____

Thank You for taking time to fill out the questionnaire. Please return promptly.

Form No. 2537

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DEVELOPMENT AND EXPERIMENTAL EVALUATION OF A MICROCOMPUTER BASED SOFTWARE PACKAGE FOR RECORDKEEPING IN SOE

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INTRODUCTION/NEED FOR THE STUDY

A wide variety of instructional materials exist for use in vocational agriculture classrooms. Some is effective in producing desired results, but much is less effective. Due to the advent of microcomputers and associated technology, computer software has become common in educational settings. The proliferation of "high tech" instructional materials has not been matched by evaluation to determine the effectiveness in producing desired learning outcomes in students.

Several agricultural educators have posited that merely developing, distributing and implementing instructional materials is not adequate (Briers, 1978; Briers and Williams, 1978; Gliem, 1976; Kaas, 1976; Ridenour, 1965). The effectiveness of instructional materials is unknown until a thorough and systematic evaluation is conducted to ascertain with certainty whether or not the materials are capable of producing desired learning outcomes for students in vocational agriculture. Therefore, the intent of this study was to conduct a systematic evaluation of a software package (Wood, 1984) which was developed by the researcher for keeping records of supervised occupational experience (SOE) programs.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. determine the effectiveness of the computer based SOE recordkeeping system as evaluated by:
   a. student attitude toward SOE recordkeeping
   b. student knowledge of SOE recordkeeping
   c. teacher attitude toward SOE recordkeeping
2. determine teacher perceptions regarding the quality and value of the computer based SOE recordkeeping system.

Research Hypotheses

The following research hypotheses were tested to accomplish the objectives of the study and to determine the effectiveness of the microcomputer based recordkeeping program for SOE:

Ho_1 : There is no significant difference between the SOE Attitude Inventory scores of students in the experimental and control groups.

Ho_2 : There is no significant difference between the SOE Knowledge Inventory scores of students in the experimental and control groups.

Ho_3 : There is no significant difference between the SOE Attitude inventory scores of teachers in the experimental and control groups.

METHODS AND PROCEDURES

Design and Sample

The study was conducted during fall, 1984, to determine the effectiveness of a microcomputerized SOE recordkeeping package for agricultural students in New York state. Effectiveness was determined by (1) student attitude toward SOE recordkeeping, (2) student knowledge of SOE recordkeeping, and, (3) teacher attitude toward SOE recordkeeping. The pretest-posttest control group design was used for the research. Two treatment levels were utilized: (1) students (n = 218) and teachers (n = 8) were provided the microcomputerized SOE recordkeeping package (experimental group), and (2) students (n = 217) and teachers (n = 7) were not given the microcomputerized recordkeeping package, but maintained their present recordkeeping activities (control group).

The population of New York agriculture teachers was identified from data collected through a Cornell based study (Berkey and Sutphin, 1984) which identified agriculture teachers who were users of microcomputers for instruction.

The population consisted of all agriculture teachers in New York state during 1983-84 school year that met the following criteria:

1. Agriculture teachers who are currently using Apple microcomputers in their instruction.
2. Agriculture teachers who are teaching at a central school in New York state (as opposed to a BOCES).
3. Agriculture teachers who are currently teaching SOE as part of the regular agricultural curriculum.
4. Agriculture teachers who include Farm Production and Management as their specialization within agriculture.
5. Agriculture teachers who are willing to implement a computerized SOE recordkeeping system as part of their instruction concerning SOE.

Experimental Group

Copies of the microcomputerized SOE recordkeeping package were mailed to the agriculture teachers assigned to the experimental group. Teachers were not provided with inservice on the use of the package, but were given guidelines for use. Inservice was purposefully omitted inasmuch that it rarely is a part of curriculum development and it would tend to overly sensitize the teachers in the experimental group to the nature of the study. It was therefore decided to omit any inservice, and to rely on suggested guidelines for use and to let the microcomputerized recordkeeping package be the fundamental treatment.

Control Group

Teachers assigned to the control group were not given the microcomputerized SOE recordkeeping package. Instead, they were asked to administer their SOE recordkeeping program as they normally would. They were then asked to collect data from their students prior to any recordkeeping activities (pretest) and after a designated time span in which they administer recordkeeping activities (posttest).

Monitoring of Treatment

To insure that the treatment was being properly administered within the constructs of the research, the experimental and control groups were monitored during the experiment through telephone conversations. Each teacher was telephoned a minimum of three times to assess their progress in administering the treatment. On-site visits were also conducted at three schools; two in the experimental group and one in the control group to enable the researcher to observe the treatments being used.

Instrumentation

A series of research instruments were designed to measure the dependent variables and to elicit personal and situational characteristics of the sample units.

Six instruments were developed to measure the dependent variables and to record personal and situational information from the teachers and students. Three instruments: Student Data Related to SOE Programs in Agriculture, SOE Attitude Inventory, and, SOE Knowledge Inventory were designed to be completed by students under the direction of their agriculture teachers, and three instruments: Teacher Data Related to SOE Programs in Agriculture, SOE Attitude Inventory, and, SOE Recordkeeping Evaluation Form were used to collect data from the teachers involved in the research. The development of the instrumentation is described in the following paragraphs.

SOE Attitude Inventory: To measure each students' attitude toward SOE recordkeping, an instrument was developed consisting of sixteen statements. The instrument consisted of attitudinal concepts concerning SOE recordkeeping, each statement was bound by an attitudinal scale, ranging from "strongly disagree" to "strongly agree". Students were asked to express their opinions concerning each statement using the following scale:

Strongly Disagree Disagree Agree Strongly Agree
1----------2----------3----------4

The test was administered as a pretest and as a postest, with the items randomly arranged for each administration. To insure face and content validity,the test was typed and reproduced similar in design to a common teacher constructed test and in addition, the SOE attitude inventory was reviewed by a panel of experts and was field tested with a group of agricultural students not involved in the study. The field test resulted in a reliability coefficient alpha of .8072 and .7844, for the pre- and posttest respectively. Mean summative scores were 47.007 for the pretest and 45.497 for the posttest administration.

SOE Knowledge Inventory: A criterion referenced examination including fifteen multiple choice items, each with four alternatives to access the students' level of knowledge of SOE recordkeeping was developed. A review of the literature, the investigators experience, and a panel of experts determined the content of the test. To insure face and content validity, the knowledge assessment was constructed to resemble a teacher made test and, it was field tested using agricultural students not involved in the research. The knowledge inventory field test resulted in a mean score of 6.412 for the pretest and 7.228 for the posttest. Reliability coefficient alpha scores were .7153 and .7243, respectively for the pre- and posttest SOE knowledge inventory.

Student Data Related to SOE Programs in Agriculture: The instrument was designed to collect data concerning personal and situational variables of the students participating in the study. The instrument was administered as a pretest. The findings were reported as frequencies.

Teacher Data Related to SOE Programs in Agriculture: The instrument was developed to collect personal and situational data from the teachers participating in the study. The instrument was field tested using teachers not included in the study. Revisions based on the field test were made. Findings were reported as frequencies.

Teacher SOE Attitude Inventory: To measure the teachers' attitude toward SOE recordkeeping, an attitude assessment was developed. The teacher attitude inventory is identical in content

to the student attitude inventory form. The instrument was field tested to insure content and face validity and yielded a reliability coefficient alpha score of .9074 and .8609 respectively for the pre- and posttest and a mean summative score of 49.805 and 50.182 for the pre- and posttest respectively.

SOE Recordkeeping Software Evaluation Form: This form was developed to access the agriculture teachers' perceptions of the value of the computerized SOE recordkeeping software. Means and standard deviations were reported.

A panel of experts, considered to be knowledgeable of SOE programs and recordkeeping were asked to review the instrumentation prior to field testing.

DATA SOURCES

Data were collected through a series of research instruments that were tested for validity and reliability in a pilot study. Administration of the data collection instrumentation was conducted by the agricultural teachers participating in the study.

The teachers were randomly assigned to the experimental or control treatment levels. Chi-square and t-test analyses were utilized to determine if randomization was successful in selecting the experimental and control groups.

Pretest observations of: (1) student and teacher personal and situational variables, (2) student and teacher attitude toward SOE recordkeeping, and (3) student knowledge of SOE recordkeeping were made prior to the experimental instruction.

At the termination of the 10 week experiment, posttest observations were made concerning (1) student and teacher attitude toward SOE recordkeeping, (2) student knowledge of SOE recordkeeping, and (3) teacher assessment of the microcomputerized SOE recordkeeping package. The data were then analyzed using the computing facilities at Cornell University.

The effectiveness of the SOE recordkeeping program was tested using the independent t-test. The .05 alpha level was used in testing the hypotheses.

RESULTS: FINDINGS, CONCLUSIONS, RECOMMENDATIONS

As illustrated in Table 1 and Table 2 the student control group scored higher on two dependent variables on the pretest measure. This indicated a greater aptitude in terms of SOE knowledge and a slight, though not statistically significant more favorable attitude toward SOE recordkeeping.

An SOE attitudinal change was detected from pretest to posttest which favored the experimental treatment group. The change was not found to be statistically significant, however, thus the null hypothesis Ho_1 regarding SOE attitude was accepted. A decrease in SOE attitude scores as measured by the SOE Attitude Inventory was indicated by the experimental and control treatment groups. The decrease in attitude was not as great in the experimental group though.

The experimental group produced a higher increase than the control group on the SOE Knowledge Inventory administered posttest, though this was not found to be statistically significant. Therefore, sufficient evidence existed to enable the researcher to accept the null hypothesis Ho_2 regarding SOE knowledge.

Teacher attitude toward SOE recordkeeping was found to be similar between treatment groups based on the pretest measure, which slightly favored the control group. Posttest measures of teacher attitudes revealed a more favorable attitude toward SOE recordkeeping by the experimental treatment group, however this was found not to be statistically significant. Thus the null hypothesis Ho_3 was accepted.

Table 1.

Means, Standard Deviations, and T-values
For Student SOE Attitude Inventory Scores

Group	SOE Attitude Mean	S.D.	d.f.	t-value
Experimental group pretest	46.3807	6.8228	13	0.326
Control group pretest	47.6479	8.2361		
Experimental group posttest	45.5046	6.4137	13	0.004[1]
Control group posttest	45.4885	6.2421		

[1]Test of Ho_1

Table 2.

Means, Standard Deviations, and T-values
For Student SOE Knowledge Inventory Scores

Group	SOE Knowledge Mean	S.D.	d.f.	t-value
Experimental group pretest	6.0461	2.6154	13	0.523
Control group pretest	6.7788	2.838		
Experimental group posttest	7.6313	3.535	13	0.468[2]
Control group posttest	6.8249	3.088		

[2]Test of Ho_2

Table 3.

Means, Standard Deviations, and T-values
For Teacher SOE Attitude Inventory Scores

Group	SOE Attitude Mean	S.D.	d.f.	t-value
Experimental group pretest	49.6239	4.359	13	0.125
Control group pretest	49.9862	6.711		
Experimental group posttest	51.7500	4.166	13	1.323
Control group posttest	47.8571	7.058		

[3]Test of Ho_3

Perhaps a more important measure of the SOE recordkeeping software was the evaluation provided by the teachers in the experimental group. The teachers, after utilizing the SOE software in their curriculum, rated twenty statements using a four point likert scale concerning the quality and value of the program.

Teacher perceptions regarding the quality and value of the computer based SOE recordkeeping system indicated that overall, the software is easy to use, well documented, efficient and effective. Procedures for revising student entries was rated lowest by the teachers. The teachers in the experimental group were then asked to respond to five open-ended questions regarding the noteworthy strengths and weaknesses of the program and if they would recommend the use of the software to others. There was a concensus among the teachers for recommendation of the software to others. In no instance did a teacher indicate they would not recommend the use of the program. Data found in Table 4 indicate means and standard deviations of the software evaluation by teachers in the experimental group.

Table 4.

SOE Software Evaluation by Teachers (n = 8)

Item		Mean	S.D.
1.	Clarity of directions	3.10	.568
2.	Consistency of directions	3.40	.267
3.	Style/language of directions	3.10	.568
4.	Readability of screen displays	3.30	.675
5.	Attractiveness of screen displays	3.40	.516
6.	Readability of reports	3.70	.675
7.	Completeness of report content	3.50	.707
8.	Usefulness of information provided by reports	3.60	.516
9.	Freedom of need for external directions/information	3.00	.000

Table 4, continued.

SOE Software Evaluation by Teachers (n = 8)

Item		Mean	S.D.
10.	Usefulness of program (screen) reaction to inappropriate entries	2.90	.316
11.	Efficiency of procedures for user to recover from errors	2.60	.516
12.	Flexibility of system	2.70	.675
13.	Efficiency of procedures for user to control rate/sequence of presentation	3.10	.568
14.	Efficiency of procedures to revise entries	2.90	.568
15.	Effectiveness of support materials	3.20	.422
16.	Comprehensiveness of support materials	3.30	.483
17.	Provision for special (shortcut) features	2.60	.516
18.	Operative/response/calculating time of program	3.10	.876
19.	Freedom of bias (sex, culture, etc.)	3.80	.422
20.	Overall ease of use	3.30	.483

Note: The rating scale was; 1 = Poor, 2 = Fair, 3 = Good, and 4 = Excellent.

Educational Importance of the Study

This study dealt with student attitude toward, and knowledge of, SOE recordkeeping, and teacher attitude toward SOE recordkeeping as effected by two different recordkeeping methods; microcomputer based and non-microcomputer based.

Significant differences between the experimental and control student groups on SOE attitude and knowledge measures were not evident when the treatment, the microcomputer based SOE recordkeeping system developed by the researcher, was utilized. Teacher

attitude was not significantly effected by the treatment, however an increase in posttest attitude scores by the teacher experimental group was evident.

Innovative recordkeeping methods and materials can be valuable components of the agriculture curriculum and should not be foregone as result of this study. Rather, it is evident from this study, that current microcomputer technology coupled with the SOE recordkeeping software developed by the researcher can be utilized by teachers and students in agriculture with no apparent delirious effects, either cognitive or affective. This important finding has merit in light of the fact that while the treatment SOE software did not statistically contribute to students' and teachers' increased affective and cognitive gains, it was perceived as a valuable and welcome addition to the agriculture classroom. Though not a casual factor in increasing agriculture students' attitude toward and knowledge of SOE recordkeeping or in increasing teachers' attitude toward SOE recordkeeping, microcomputers, associated technology and the SOE recordkeeping software should be a part of agricultural instruction concerning keeping records.

Recommendations

It is recommended, based on the findings, that microcomputer technology be linked with SOE recordkeeping and that teachers and students in agriculture maintain the use of current technology and methods.

The findings of this research identified agriculture student and teacher characteristics and determined differences between experimental and control groups on measures of SOE attitude and knowledge scores. The recommendations contained herein, based on the findings of the research, warrant consideration by administrators, supervisors, teacher educators and instructors who find themselves concerned with the operation of vocational agriculture programs:

1. The microcomputerized SOE recordkeeping program should be used by vocational agriculture students as an aid in keeping detailed, up-to-date and accurate records.

2. The SOE recordkeeping software should be utilized by teachers of vocational agriculture for summarizing student SOE records. This will provide the instructor with important documentation for demonstrating the scope and importance of student enterprises and experience to interested parties.

3. The microcomputerized SOE recordkeeping program should be used by vocational agriculture students to help improve their accuracy in keeping detailed SOE records, and to a lesser degree to help improve their attitude toward and knowledge of SOE recordkeeping.

4. Current recordkeeping practices (including methods and materials) should not be supplanted by unique, innovative and untested systems, but should be augmented by the addition of the computer based SOE recordkeeping program which has been rigorously and systematically evaluated .

5. Inservice education regarding the use of the SOE recordkeeping software should be made available to vocational agriculture teachers. Additionally, teachers in the preservice agriculture education program should be given instruction on its use.

6. The microcomputerized SOE recordkeeping program should be utilized by agriculture students as an aid in developing computer literacy skills which are vital competencies for graduates of vocational agriculture programs.

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COMPARISON OF THE PERCEPTIONS OF AGRICULTURAL PERSONNEL REGARDING PROFESSIONAL COMPETENCIES NEEDED BY INTERMEDIATE AGRICULTURAL EXTENSION AGENTS IN KENYA

Eastern Region Agricultural Education
Research Conference

May 10, 1985

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INTRODUCTION

Intermediate agricultural education and training are vital for developing Kenya rural areas. It is through education and training programs that rural change agents are equipped with knowledge and skills which they need in order to transform rural areas.

The Weir Commission Report on Agricultural Education (1967) emphasized that intermediate education for agricultural extension personnel produces people who understand and are skilled in the most up-to-date practical methods. According to the Food and Agricultural Organization Report (1970:103), the essential purpose of intermediate level training is to prepare people for employment as technicians in a wide range of skilled occupations. This implies that the educational emphasis must be on practical application and the technician must aim at understanding the basic principles underlying modern methods in the chosen skill as well as acquiring technical and managerial ability. The curriculum for training intermediate agricultural extension personnel, therefore, needs to adapt to the needs of extension agents. Intermediate courses must not aim at training people who, at the conclusion of their course, will want to seek a "white collar" job. Rather it should emphasize the practical contribution which the personnel have to make to rural development. Those courses should be planned to help the personnel to understand the virtues of the critical grassroots work which they will be doing.

Specifically, the following two questions need to be considered when planning agricultural training programs:

1. What to extend to farmers? This includes knowledge of technical subjects.

2. How to extend agricultural knowledge and skills to farmers?

The implication of the above questions to trainers is that both technical and professional competencies needed by intermediate agricultural extension personnel should be identified and included in the training programs.

OBJECTIVES

The primary purpose of this study was to describe the perceptions of technical officers, district agricultural officers, and trainers regarding the professional competencies needed by the intermediate agricultural extension personnel in the Kenya Agricultural Extension Service.

The following specific objectives were developed to provide a framework for conducting this study:

1. To describe perceptions of technical officers, district agricultural officers, and trainers regarding the importance of professional competencies needed by intermediate agricultural extension personnel in Kenya.

2. To compare the perceptions of technical officers, district agricultural officers, and trainers regarding the importance of professional competencies needed by intermediate agricultural extension personnel.

To facilitate the analysis of data the following null hypothesis was formulated. There are no significant differences among the perceptions of technical officers, district agricultural officers, and trainers regarding the importance of professional competencies needed by intermediate agricultural extension personnel.

METHODS

The target population of this study consisted of technical officers, district agricultural officers, and trainers. Random samples were drawn from the above populations using both cluster and stratified sampling techniques.

Technical officers and district agricultural officers were stratified by province. A total number of 20 districts was selected from the provinces using a table of random numbers. All the technical officers in these 20 districts were included in the study. A total of 200 technical officers and 30 district agricultural officers was finally identified. The proportional stratified sampling technique was used in selecting 120 trainers from Egerton College and Jomo Kenyatta College of Agriculture and Technology.

An initial questionnaire was developed and validated using a panel of 13 experts from Egerton College. The revised questionnaire was pilot tested using a sample of 22 trainers and agricultural extension workers undergoing training in the United States. The pilot instrument was tested for its reliability using Cronbach's coefficient alpha. The final questionnaire consisting of 14 biographical questions and 111 professional competencies was adapted and mailed to each of the subjects.

Descriptive statistics were used to analyze datas pertaining to the ratings of the importance of professional competencies by the three groups of respondent. Mean scores and standard deviations were obtained for each of the professional competencies. Objective two and the hypothesis were further analyzed using one-way analysis of variance. An F statistic was calculated to determine which competencies were perceived significantly different by the three groups of respondents. Scheffe Multiple Range Test was employed to distinguish which groups were significantly different in rating the importance of professional competencies.

RESULTS

The respondents were asked to rate the importance of a list of 111 professional competencies needed by intermediate agricultural extension personnel. The professional competencies were categorized into administration, program planning, program execution, teaching, communication, understanding human behavior, maintaining professionalism, evaluation, and 4-K youth.

It was found that most of the competencies were considered by the three groups of respondents to be of high importance in operating agricultural extension programs. Only one of the competencies in the communication category was rated as being of moderate importance.

The hypothesis which stated that there are no significant differences among the perceptions of technical officers, district agricultural officers, and trainers regarding the importance of the professional competencies, was rejected for 17 of the 111 professional competencies. The 17 competencies for which the hypothesis was rejected are summarized in Tables 1 through 5.

One-way analysis of variance and Scheffe Multiple Range Test revealed that the competency "prepare job description for staff" in administration, and the competency "prepare a long range program of work" in program planning were rated significantly different in importance by the three groups of respondents. The two competencies were rated significantly lower by technical officers as compared to the trainers (Table 1).

Table 1. Mean Scores and Standard Deviations Obtained from the Perceptions of Technical Officers (TOs), District Agricultural Officers (DAOs), and Trainers for Competencies Rated Significantly Different in Administration and Program Planning.

Group	n	C17 (Administration)		C5 Program Planning)	
		x	SD	x	SD
Technical Officers	167	4.06A	0.95	3.48A	1.04
District Agricultural Officers	18	4.22AB	0.88	3.50AB	1.15
Trainers	86	4.41 B	0.76	3.88 B	0.87
Total	271	4.27	0.86	3.62	1.02

Means of groups followed by the same letter are not significantly different from each other based on the Scheffe Multiple Range Test, $p<0.05$.

Note: C17 - Prepare job description for staff you supervise ($F=4.32$; $p<.01$)
C5 - Prepare a long-range program of work ($F=4.65$; $p<0.01$)

One-way analysis of variance revealed that four competencies in program execution were rated significantly different in importance by the three groups of respondents. Scheffe Multiple Range Test indicated that the competency "utilize a calendar of events" was rated significantly lower by the district agricultural officers as compared to the other two groups of respondents. The competencies "follow a written program of work" and "select progressive farm cooperators for trial and result demonstrations" were rated by the three groups of respondents in the same way (Table 2).

One-way analysis of variance and Scheffe Multiple Test showed that four professional competencies in the teaching category were rated significantly different in importance by the three groups of respondents. The competencies "develop and use instructional materials," "employ principles of learning and teaching," and "employ good feedback techniques" were rated significantly higher by the trainers as compared to the district agricultural officers (Table 3).

The competencies "communicate orally to individuals" and "deal with complaints in communities" were rated significantly lower in importance by the district agricultural officers as compared to the other two groups of respondents. The competency "develop a plan for professional development" in maintaining professionalism was rated significantly higher by the trainers than the district agricultural officers (Table 4).

One-way analysis of variance and Scheffe Multiple Range Test revealed that there were four competencies in evaluation which were rated significantly different by the three groups of respondents. The competency "analyze and interpret results from questionnaires" was rated significantly higher by the trainers. The two competencies "evaluate results of an extension event or activity" and "interpret research findings from research stations" were rated significantly lower in importance by district agricultural officers as compared to the ranking of the trainers (Table 5).

Conclusions and Implications

The following conclusions and implications were made based on the findings of this study.

1. The three groups of respondents rated most of the identified professional competencies as being of high importance. Only three competencies were considered to be of moderate importance. It can, therefore, be concluded that the respondents considered all the professional competencies included in the study to be important and relevant in implementing agricultural extension programs by the intermediate agricultural extension personnel in Kenya. This implies that these professional competencies should be taught to this category of personnel.

Table 2. Mean Scores and Standard Deviations Obtained from the Perceptions of Technical Officers (TOs), District Agricultural Officers (DAOs), and Trainers for Competencies Rated Significantly Different in Program Execution.

Group	N	C1		C2		C8		C10	
		X	SD	X	SD	X	SD	X	SD
Technical Officers	167	4.16A	0.85	4.06A	0.97	4.33A	0.79	4.08A	1.00
District Agricultural Officers	18	3.56 B	1.04	3.22	1.17	4.22AB	0.81	3.44 B	1.10
Trainers	86	4.19A	0.82	4.10	0.89	3.96 B	0.98	4.08A	1.00
Total	271	3.97	0.90	3.80	1.01	4.17	0.97	3.87	1.03

Means of groups followed by the same letter are not significantly differently different from each other based on the Scheffe Multiple Range Test, $p<.0.05$.

Note: C1 - Utilize a calendar of events ($F=4.39$; $p<0.013$)
C2 - Follow a written program of work ($F=6.70$; $p<.001$)
C8 - Identify and use early adopters or opinion leaders in extension programs ($F=5.34$; $p<0.005$)
C10 - Select progressive farm cooperators for trial and result demonstrations ($F=3.14$; $p<0.035$)

Table 3. Mean Scores and Standard Deviations Obtained from the Perceptions of Technical Officers (TOs), District Agricultural Officers (DAOs), and Trainers for Competencies Rated Significantly Different in Teaching.

Group	N	C2		C3		C4		C12	
		X	SD	X	SD	X	SD	X	SD
Technical Officers	167	3.99AB	0.90	4.01AB	0.84	4.09A	0.89	4.16AB	0.79
District Agricultural Officers	18	3.83A	0.71	3.89A	0.96	3.61A	1.19	4.00A	0.84
Trainers	86	4.36 B	0.88	4.34 B	0.90	4.41 B	0.84	4.39 B	0.82
Total	271	4.06	0.83	4.08	0.90	4.04	0.97	4.18	0.82

Means of groups followed by the same letter are not significantly differently different from each other based on the Scheffe Multiple Range Test, $p<.0.05$.

Note: C2 - Employ principles of learning and teaching ($F=5.86$; $p<0.003$)
C3 - Develop and use instructional materials ($F=4.72$; $p<0.009$)
C4 - Use non-formal teaching methods (e.g., farm visit) for particular situations ($F=7.11$; $p>0.003$)
C12 - Employ good feedback techniques ($F=3.27$; $p<0.039$)

Table 4. Mean Scores and Standard Deviations Obtained from the Perceptions of Technical Officers (TOs), District Agricultural Officers (DAOs), and Trainers for Competencies Rated Significantly Different in Communication and Maintaining Professionalism.

Group	N	C2		C6		C10	
		X	SD	X	SD	X	SD
Technical Officers	167	4.00AB	1.02	3.69AB	1.16	4.09AB	0.96
District Agricultural Officers	18	3.61A	0.79	3.61A	1.09	3.61A	0.85
Trainers	86	4.17 B	0.74	4.14 B	0.83	4.24 B	0.85
Total	271	3.81	0.99	3.98	0.89	3.93	0.85

Means of groups followed by the same lettere are not significantly different from each other based on the Scheffe Multiple Range Test; $p<0.005$.

Note: C2 - Develop a plan for professional development ($F=2.90$; $p<0.05$)
C6 - Communicate orally to individuals ($F=5.55$; $p<0.004$)
C10 - Deal with complaints ($F=3.58$; $p<0.03$)

Table 5. Mean Scores and Standard Deviations Obtained from the Perceptions of Technical Officers (TOs), District Agricultural Officers (DAOs), and Trainers for Competencies Rated Significantly Different in Evaluation.

Group	N	C6		C7		C8		C13	
		X	SD	X	SD	X	SD	X	SD
Technical Officers	167	3.71A	1.07	4.02AB	1.00	4.22AB	1.02	3.48A	1.11
District Agricultural Officers	18	3.61A	1.04	3.94A	0.80	3.89A	0.90	3.89AB	0.83
Trainers	86	4.09 B	0.80	4.37 B	0.70	4.48 B	0.70	3.92 B	0.90
Total	271	3.80	0.98	4.11	0.83	4.20	0.88	3.76	0.95

Means of groups followed by the same letter are not significantly different from each other based on the Scheffe Multiple Range Test, $p<0.05$.

Note: C6 - Analyze and interpret results from questionnaires ($F=4.70$; $p<0.01$)
C7 - Evaluate results of an extension event or activity ($F=4.57$; $p<0.01$)
C8 - Interpret research findings from research stations ($F=3.95$; $p<0.02$)
C12 - Conduct literature search utilizing library resources ($F=5.52$; $p<0.004$)

2. The three groups of respondents rated the importance of the 17 professional competencies significantly different. This implies that there was no general agreement among the respondents concerning the importance of the 17 professional competencies in operating agricultural extension programs. The curriculum planners in the intermediate agricultural training institutions should, therefore, examine the philosophical and psychological implications of the 17 competencies which were rejected due to the lack of general consensus among the three groups of respondents. However, it should be noted that for practical purposes these 17 competencies should be considered in planning extension education courses. This is because the three respondent groups rated them to be of "high importance." There was, however, a general agreement among the respondents regarding the importance of the remaining 94 professional competencies.

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FACTORS AFFECTING JOB SATISFACTION: CORNELL GRADUATES (1974-1982) IN AGRICULTURAL EDUCATION

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INTRODUCTION

There is currently much concern about job stress or "burnout". Although burnout occurs in nearly every occupational area, teachers have shown a mental disability retirement rate 10 times as high as other high-stress occupations such as police work and firefighting (Wetterman, 1984). Researchers have consistently found that people who are satisfied with their jobs are healthier and outlive those who are discontented. (Gechman et al, 1975).

A high rate of job turnover has occurred within high-stress occupations during the past decade. Data from those leaving jobs point to factors such as job dissatisfaction, excessive job demands, and a feeling of powerlessness over their work situation as major contributors to job changes. A study by Sparks (1979) found that 46 percent of the teachers surveyed were dissatisfied with their job as a whole and said if they were to do it over again they would not choose teaching as a career.

Bureaucracy, job turnover, and job dissatisfaction are directly related to occupational stress (Cedoline, 1982). In this context it seems imperative that information be collected to examine the factors affecting the job satisfaction of Cornell graduates who have completed the basic requirements to enter the agricultural education profession. In this study the graduates will be referred to according to the year they did their student teaching.

OBJECTIVES

The major purpose of this study was to examine the factors affecting job satisfaction of graduates in agricultural education.

The specific objectives were:

1. To establish a data base for a longitudinal study of job satisfaction of former Cornell student teachers in agricultural education.

2. To determine and describe the job satisfaction status in 1980 of 1974-78 Cornell student teachers in agricultural education.

3. To determine and describe the job satisfaction status in 1984 of 1974-82 Cornell student teachers in agricultural education.

4. To compare selected variables affecting job satisfaction as perceived by Cornell graduates. Variables were year student taught, salary, sex, teacher or non-teacher, type of high school agricultural experience, job likes, and job dislikes.

METHODOLOGY

Data were collected from all Cornell student teacher classes in agricultural education beginning with those who did their student teaching during the fall semester of 1974. Using a project developed instrument, data were collected from former student teachers nearing the end of their first year of employment. Since student teaching is normally done in the fall of

the senior year following graduation, this would allow all survey respondents to have been on the job for approximately one year before completing their first survey for this study.

The data were analyzed using descriptive and inferencial statistics. Treatments and tests included frequency tables, cross tabulations, chi-square, analysis of variance, analysis of covariance, and linearity. Tests of significance were made at the .05 alpha level.

This study of job satisfaction is a beginning piece of a longitudinal study that will include plans to stay on the job, job responsibilities, means of keeping current in technical agriculture, and inservice needs.

DATA SOURCES

The instrument for the initial phase of the study was developed in 1980 and used to survey former Cornell graduates who had completed their student teaching in agricultural education during the period of 1974-1978. The survey instrument was field tested for content validity and clarity by staff, graduate students, and several secondary teachers of agriculture.

Following the analysis and dissemination of the data gathered in 1980 the survey was modified to improve content validity. Modifications included the elimination of two items that provided information of no practical use and the rewording of the questions about job likes and dislikes so that all respondents would answer these questions. In the original survey only teachers were asked about job likes and dislikes. The modified instrument was sent in 1983 to all former Cornell student teachers in agricultural education for the period of 1974-1981 and again in 1984 for student teachers from 1974-1982.

The 1980 survey yielded a return of 104 (86%) of the 121 student teachers in the 1974-1978 classes. The 1984 survey yielded a return of 155 (75%) of the 206 students in the 1974-1982 classes. A 20 percent random sample of the non-respondents were contacted and found not to differ from the survey respondents.

FINDINGS

Demographic Profile

The comparisons of the group profiles for the entire population of student teachers available in 1980 and 1984 are useful in indicating trends relating to the type of student entering the program. This type of information is available by studying the data of the students who entered the student teaching program and thus is not dependent upon survey returns. Available information for each year shows the number of male and female student teachers; graduates or undergraduates at the time of student teaching; whether the students were transfers from one of the six agricultural and technical colleges or other community colleges; the number of students who had declared agricuiltural education as their major at the time of entering Cornell; and their area of teaching specialization, for example, agricultural mechanization, conservation, and farm production management.

A comparision of the students of the last four years (1981-84) with those who had completed their student teaching at the time of the first survey in 1980 (1974-1980) shows an increase in the percentage of females from 33 percent of the total in 1980 to 57 percent for the last four years. (Table 1). The first females entered the student teaching program in 1974.

Table 1. SEX, LEVEL OF DEGREE PROGRAM AND AG & TECH COLLEGE TRANSFERS BY YEAR OF STUDENT TEACHING

Year of Student Teaching	Sex		Level of Degree Program		% Ag & Tech Transfers
	% Female	% Male	% Undergrad	% Grad	
1974 (n=16)	12	88	100	0	69
1975 (n=25)	32	68	84	16	36
1976 (n=34)	27	73	71	29	62
1977 (n=31)	46	54	94	6	58
1978 (n=15)	47	53	80	20	73
1979 (n=17)	36	64	88	12	59
1980 (n=21)	33	67	71	29	71
1981 (n=21)	62	38	62	38	43
1982 (n=26)	44	56	89	11	85
1983 (n=14)	64	36	71	29	60
1984 (n=7)	71	29	71	29	57
Average (n=20.6)	41	59	81	19	61

Total N = 227

The comparison of the same two time periods show little change in the balance of graduate or undergraduate students. The composite of the different years of student teacher groups currently shows four out of every five are in the program as undergraduates.

There has been a slight increase in the transfer students from the two year agricultural and technical programs going from 60 percent at the time of the 1980 survey to 63 percent during the last four years. (Table 1). Of the six two-year agricultural and technical colleges the college at Cobleskill has sent a total of 38 percent of the two year transfer students, followed by Morrisville with 20 percent, Alfred with 13 percent, both Canton and Farmingdale with 10 percent, and Delhi with 9 percent. These account for the 61 percent of the total student teachers over the 11 year period represented by the year groups of student teachers.

Regarding the number of students who had selected agricultural education as their major at time of entry at Cornell, though there has been a bit of fluctatuation from one year to the next, 54 percent have had agricultural education declared as their major at the time of entry into Cornell University.

For the area of teaching specialization, the largest group has been the area of farm production and management with 53 percent specializing in this area. This is consistent with the percentage of teacher openings in recent years. The other areas are ornamental horticulture with 18 percent, conservation with 11 percent, agricultural mechanization 7 percent, horse handling and care 5 percent, small animal care 4 percent, and 2 percent in agribusiness. Neither of these two factors have shown any appreciable change in recent years as compared with the data of the original survey in 1980.

Job Satisfaction

Respondents were asked to rate their level of job satisfaction for their present job on a five-point scale. The scale, showing the amount of time satisfied with the present job, went from: (1) "Seldom" through, (2) "Occasionally", (3) "About half of the time," and (4) "A good deal of the time," to (5) "Most of the time." Job satisfaction was then tested for its correlation with the selected variables of year of student teaching, salary, sex, type of job (teaching or non-teaching), and type of high school agricultural experience. (Table 2).

The mean salary in 1980 showed a significant correlation with job satisfaction level. This variable showed no correlation in 1984. None of the other selected variables were significantly correlated in either 1980 or 1984.

Table 2. CORRELATION OF SELECTED VARIABLES WITH JOB SATISFACTION RATINGS IN 1980 AND 1984

Selected Variables	Correlation Coefficients	
	Job Satisfaction 1980	Job Satisfaction 1984
1. Mean Salary	.295**	.0726
2. Year of Student Teaching	-.748	-.0370
3. Sex	.0727	.0745
4. Type of Job	.1648	.1399
5. High School Agriculture Experience		
a. Raised on farm/ agribusiness	.0465	-.0793
b. H.S. agriculture program	-.1078	.0443
c. 4-H member	.1018	.0910
d. FFA member	-.1502	-.0680
e. Farm/agri-business work experience	-.0597	-.0639

* Significant at the p 0.05 level.
** Highly significant at the p 0.01 level.

The 1980 status of time satisfied with the job showed a mean rating of 3.81. Just over one third (37%) were satisfied "most of the time" with 4% "seldom" satisfied and 10% "occasionally" satisfied. The 1983 survey showed that the mean rating increased to 4.15. (Table 3).

The 1984 survey showed the status of job satisfaction had increased to 4.28 with half of the respondents (51%) satisfied "most of the time." Less than one percent of the respondents were only "seldom" satisfied.

Table 3. MEANS FOR JOB SATISFACTION RATINGS AND SALARY FOR 1980, 1983, AND 1984 BY YEAR OF STUDENT TEACHING

Year of Student Teaching	Job Satisfaction			Annual Salary ($)		
	1980	1983	1984	1980	1983	1984
1974	3.69	3.90	4.44	15,269	21,125	25,357
1975	4.05	4.06	4.67	14,500	19,411	22,700
1976	3.83	4.56	4.17	12,500	18,538	18,357
1977	3.88	4.16	4.05	11,978	18,500	17,600
1978	3.47	3.80	3.90	11,643	16,500	20,300
1979		4.33	4.64		18,833	18,750
1980		4.20	4.29		16,542	17,264
1981		4.00	4.33		15,286	17,000
1982			4.20			14,441
Grand Mean	3.81	4.15	4.28	13,074	18,016	18,500

Each year class of student teachers showed some increase in the mean job satisfaction ratings for their respective year group from the 1980 survey to the 1984 survey. The pooled year group means for 1980 compared to 1984 showed a t-test value of -2.65 and a highly significant difference between the two periods of time ($p \leq .01$).

In 1980 the difference between male and female teachers' salaries was $665. Comparing non-teaching jobs for the same period of time there was a difference between male and female teachers of $4,104. In 1984, the difference between male and female teachers lowered to $452 while for non-teachers it had increased to $6,389. In all instances the mean salary of males was higher.

There was no significant linear relationship between job satisfaction and salary in 1984 ($p = 0.82$) even though there had been a significant relationship ($p = 0.04$) in 1980.

No significant relationship was found in either 1980 or 1984 between job satisfaction and the variables of type of high school agricultural experience or what persons enjoy most about their job.

In 1984 all respondents were asked to indicate the one feature most disliked about their current job. Leading the list of dislikes was red tape and bureaucracy (34%) followed by working conditions, job pressure and demands, long hours, and salary. (Table 4). Red tape and bureaucracy was listed first by both teachers and non-teachers.

Table 4. WHAT WAS MOST DISLIKED ABOUT THE JOB IN 1984 BY ALL RESPONDENTS, TEACHERS, AND NON-TEACHERS EXPRESSED IN PERCENTAGES

Most disliked about job	Percent		
	All (N=112)	Teachers (n=45)	Non-Teachers (n=67)
1. Red tape, bureaucracy, work, administrative problems	34	45	27
2. Working conditions, locations, travel	17	14	17
3. Pressure, job demands	14	5	9
4. Long hours	11	2	17
5. Salary	9	14	6
6. Discipline, violence, lack of interest	6	14	0
7. Routine, lack of creativity, not own boss	5	0	8
8. Non-support by community, adults, students, or peers	4	5	5
Total	100%	99%	99%

In 1984 there was a significant difference, using chi-square, between teachers and non-teachers and what persons disliked about their jobs ($p = 0.002$). However, there was no difference between what persons disliked most about their jobs and their level of job satisfaction ($p = 0.29$).

CONCLUSIONS

The following conclusions were drawn:

1. The only demographic variable that changed much between 1980 and 1984 was the increased percentage of females certifying to teach agriculture.

2. Job satisfaction has increased from 1980 to 1984.

3. Job satisfaction was not changed by the number of years in the work force.

4. There is much more sex equity in teaching salaries vs non-teaching salaries.

5. No relationship was found between job satisfaction and type of high school agricultural experience or job likes.

6. Red tape and bureaucracy is the single most disliked job feature for both teachers and non-teachers.

RECOMMENDATIONS AND IMPLICATIONS

The following summary of recommendations and implications is offered:

1. Graduates in agricultural education need more preservice or in-service training in time management, handling paperwork, and related administrative skills. Perhaps there should be a "survival skills" unit.

2. The job satisfaction survey should be included each year as a part of building the longitudinal data base.

3. The job satisfaction portion of the annual survey to build a longitudinal data base should be modified and expanded. The current scale does not provide sufficient detail to explain the job satisfaction rating given.

4. Other variables related to student teacher employment should be investigated.

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KNOWLEDGE, ATTITUDES, AND TEACHING PRACTICES OF VOCATIONAL AGRICULTURE TEACHERS CONCERNING THE PUBLIC LAW 94-142 THE EDUCATION FOR ALL HANDICAPPED CHILDREN ACT

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INTRODUCTION

The placement of handicapped students in vocational agriculture programs has been prevalent for years on an informal basis. Vocational agriculture teachers have taught the handicapped and disadvantaged, in some cases without realizing it (Barrett, 1975). Since the passage of Public Law 94-142, teachers of vocational agriculture have been mandated to meet the educational needs of handicapped learners in the regular classroom.

While students with diverse handicapping conditions are mainstreamed into regular vocational agriculture programs, no systematic effort has been made to review the knowledge, attitudes and teaching practices of vocational agricultural teachers in Ohio pertaining to Public Law 94-142.

NEED FOR THE STUDY

A combination of factors created the significance for studying the knowledge, attitudes and teaching practices of vocational agriculture teachers concerning the integration processes relative to handicapped learners. First, since the passage of Public Law 94-142 in 1975, the investigator found no studies that investigated teachers' knowledge, attitudes, and teaching practices regarding PL 94-142. Second, with NCATE and state accreditation agencies requiring teacher education programs to incorporate basic concepts of special education into teacher education programs, it was necessary to establish base line data for vocational agriculture teachers' knowledge attitudes and teaching practices. Third, from an exploratory perspective, it was important to know the degree to which the integration processes were being practiced. Finally, the General Accountability Office Report to Congress (1976) explicitly emphasized the need for improving the training of vocational teachers dealing with handicapped students. The following statement is from that report:

> The handicapped are usually excluded from the regular public school vocational programs and are limited to segregated classes offering few career choices. One major barrier preventing them from participating in regular vocational programs is that vocational educators generally lack training in dealing with the handicapped. For this reason and because of their apprehension, vocational educators generally exclude the handicapped from the regular vocational programs. The lack of needed training could result in millions of

handicapped individuals being unemployed and heavily dependent on society. (p. 28)

OBJECTIVES OF THE STUDY

The study was designed to investigate the following questions:

1. What is the perceived level of knowledge of teachers of vocational agriculture pertaining to the major provisions of Public Law 94-142?
2. What are the attitudes of vocational agriculture teachers concerning the major provisions of Public Law 94-142 vocational agriculture programs?
3. What are the teaching practices of vocational agriculture teachers relative to the major provisions of Public Law 94-142?
4. What are the relationships between the teachers' level of knowledge, attitudes, and teaching practices concerning the major provisions of Public Law 94-142?
5. What are the differences between teachers of vocational agriculture in joint vocational schools and comprehensive high schools in their perceived level of knowledge, attitudes, and teaching practices concerning the major provisions of Public Law 94-142?

METHODOLOGY AND PROCEDURES

The sample for the study was 336 vocational agriculture teachers who taught in public secondary schools in Ohio during the 1981-82 school year. After the random sample was drawn, teachers were categorized into four groups: (a) joint vocational school with one year vocational certification, (b) joint vocational school with four year provisional certification, (c) comprehensive high school with one year vocational certification, and (d) comprehensive high school with four year provisional certification.

A three-part instrument was developed by the researcher to secure the information. Data were collected by mail survey; 78 percent of the vocational agriculture teachers responded.

The content validity of the instrument was established by a jury of experts from the Department of Exceptional Children, the Department of Agricultural Education, The Ohio State University, and the Department of Vocational Education and Technology, University of Vermont. Using Chrombach Alpha, the following reliability coefficients were established: Part I, perceived

level of knowledge, 10 items, Chrombach Alpha = 0.88. Part II, attitudes, 20 items, Chrombach Alpha = 0.86.

RESULTS AND CONCLUSIONS

Knowledge

As a group, vocational agriculture teachers in Ohio perceive themselves as having inadequate knowledge of the integration processes necessary to integrate learners with special needs into vocational agriculture programs.

Insert Table I

This perceived level of knowledge is explained, at least partially, by their lack of participation in workshops and university courses concerning the integration of handicapped learners and by their lack of outside readings. Even though teachers' perceived level of knowledge is inadequate, they indicate they had some knowledge prior to their participation in the study.

Attitudes

Teachers indicate an "unsure" attitude about the legislation for educating handicapped learners. They did not indicate attitudes that are markedly favorable or unfavorable toward the integration process.

Insert Table II

Teaching Practices

The presence of handicapped learners in vocational agriculture classes was very prevalent; however, the number of teaching practices implemented by teachers that pertains to effective integration of handiapped students was minimal.

Insert Table III

The teaching practices used most frequently were individualized educational plans for some students, referral of students for evaluation, and direct contact with local educational agencies such as counselors, psychologists and speech pathologists. Teaching practices not used frequently are direct involvement in IEP development, identification of special

services needed for handicapped students in vocational agriculture classes, assessment of handicapped students entry level skills, involvement in initial IEP meeting as part of the basic staffing team and review of the IEP after development and prior to parental approval.

Relationships Between Perceived Knowledge Attitudes and Teaching Practices

There is a low positive relationship between teachers' knowledge and attitudes about the integration process. For teachers who teach handicapped students, there is a moderate positive association between teachers' knowledge and the number of teaching practices used that relate specifically to handicapped learners. Both of these relationships substantiate the theoretical constructs that knowledge influences attitudes and teaching practices. For teachers who teach handicapped students, there is no relationship between teachers' attitudes toward the integration processes and the number of teaching practices used.

Insert Table IV

Comparisons of Teachers in Joint Vocational Schools and Comprehensive High School on Knowledge, Attitudes and Teaching Practices

There are no differences between teachers in joint vocational schools and in comprehensive high schools in their perceived level of knowledge and attitudes about Public Law 94-142.

Insert Tables V & VI

When teaching practices are considered, teachers in joint vocational schools use a higher number of teaching practices that related specifically to handicapped learners than teachers in comprehensive high schools. This may be explained by the fact that support personnel in joint vocational schools have primary responsibility to assist vocational teachers, whereas support personnel in comprehensive high schools assist all teachers rather than only vocational teachers.

Insert Table VII

The teaching practices of teachers in both types of schools with resource room teachers vocational special needs teachers, special education teachers, and teacher aides are higher than teachers in both types of schools without these support personnel.

IMPLICATIONS AND RECOMMENDATIONS

Based upon the findings of the study the following implications and recommendations are proposed.

1) Collegiate preservice programs which prepare vocational agriculture teachers should address the educational needs of handicapped learners integrated into regular classroom settings. This could be done by incorporating the following into core curricula: free appropriate public education, least restrictive environment, causes and prevalence of the major handicapping conditions, teaching strategies, curriculum modification, development and implementation of individualized educational plans, due process and the importance of a cooperative effective among educational professionals.

   If these important factors were reinforced by field, laboratory and clinical experiences, preservice teachers could enter the teaching profession with adequate knowledge and experience to address the needs of students with diverse learning abilities. Thus, the potential for a more positive attitude is evident.

2) Collegiate preservice programs in agricultural education and special education should work cooperatively to better prepare preservice teachers in both disciplines, as vocational training for the handicapped is becoming a very viable and necessary option.

3) Teacher education programs should offer inservice training to those teachers educating handicapped learners. This could be implemented in the form of short courses, off campus courses or during technical updates.

4) Teacher education programs in agricultural education should provide cooperating teachers with essential knowledge and adequate experience prior to the arrival of student teachers. If the student teaching experience is to be successful, cooperating teachers should be able to further enhance the student teachers experience with handicapped learners, thus providing a successful exposure, which in turn could create a positive attitude.

If vocational agriculture programs are to be successful further research is needed in the following areas:

1) How Supervised Occupational Experience Programs can further enhance handicapped learners training in vocational agriculture.

2) How agricultural related youth organizations can help build social and emotional confidence of handicapped learners.

3) Modifications for teaching laboratories in vocational agriculture

4) Modifications for agricultural related equipment and machinery.

5) Curriculum development and modifications.

6) What is the employment opportunities on agriculture for handicapped individuals.

TABLE I

KNOWLEDGE SCORES FOR VOCATIONAL AGRICULTURE TEACHERS CONCERNING THE INTEGRATION OF STUDENTS WITH SPECIAL NEEDS

Score[a]	Rating	No.	Percent
10-15	No Knowledge	52	20
16-20	Inadequate	57	22
21-25		64	25
26-30	Adequate	62	24
31-35		17	5
36-40	Substantial	5	2
41-45		2	1
46-50		3	1
Total		262	100

mean = 22.6 median = 22.7 mode = 20.0
S.D. = 7.7

[a]Summated score for 10 items where 1 = no knowledge, 2 = inadequate, 3 = adequate, 4 = substantial, 5 = extensive.

TABLE II

ATTITUDES OF VOCATIONAL AGRICULTURE TEACHERS CONCERNING THE INTEGRATION OF STUDENTS WITH SPECIAL NEEDS

Score[a]		No.	Percent
20-30	Strongly Disagree	0	0
31-40	Disagree	1	0
41-50		9	3
51-60	Unsure	75	29
61-70		172	66
71-80	Agree	5	2
81-90			
91-100	Strongly Agree	0	0
Total		262	100

Mean = 61.9 Median = 62.6 Mode = 62
S.D. = 5.4

[a]Summated score for 20 items when strongly disagree = 1, disagree = 2, unsure = 3, agree = 4, and strongly agree = 5.

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TABLE III

TEACHING PRACTICES SCORES FOR VOCATIONAL AGRICULTURE TEACHERS REPORTING HANDICAPPED STUDENTS IN THEIR CLASSES

Score[a]	No.	Percent
1-2	48	28
3-4	32	19
5-6	25	14
7-8	34	20
9-10	22	13
11-12	11	6
All Teachers	172	100

mean = 5.3 median = 4.9 mode = 1
S.D. = 3.2

[a]Summated score for 14 items, each item was dicotomus in nature: yes = 1, no = 0; refer to questions 31 to 36 of

and review of IEP after development and commented prior

to parent approval.

TABLE IV

CORRELATIONS AMONG PERCEIVED KNOWLEDGE, ATTITUDES, AND TEACHING PRACTICE SCORES

	Knowledge	Attitudes	Teaching Practices
Knowledge	-	.14*	.33*
		(n = 262)	(n = 172)
Attitudes			.07
			(n = 172)

*p .01

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TABLE V

SUMMARY OF COMPARISONS OF TEACHERS IN JOINT VOCATIONAL SCHOOLS AND COMPREHENSIVE HIGH SCHOOLS ON PERCEIVED LEVEL OF KNOWLEDGE OF THE INTEGRATION PROCESS

Factor Controlled	Result of Comparison
Presence or Absence of Resource Room Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of Vocational Special Needs Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of Special Education Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of School Psychologist	JVS = Comp presence = absence no interaction
Presence or Absence of Reading Specialist	JVS = Comp presence > absence interaction
Presence or Absence of Teacher Aides	JVS = Comp presence = absence no interaction
Presence or Absence of Tutors	JVS = Comp presence = absence no interaction

TABLE VI

SUMMARY OF COMPARISONS OF TEACHERS IN JOINT VOCATIONAL SCHOOLS AND COMPREHENSIVE HIGH SCHOOLS ON ATTITUDES OF THE INTEGRATION PROCESS

Factor Controlled	Results of Comparison
Presence or Absence of Resource Room Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of Vocational Special Needs Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of Special Education Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of School Psychologist	JVS = Comp presence = absence no interaction
Presence or Absence of Reading Specialist	JVS = Comp presence > absence no interaction
Presence or Absence of Teacher Aides	JVS = Comp presence = absence no interaction
Presence or Absence of Tutors	JVS = Comp presence = absence no interaction

TABLE VII

SUMMARY OF COMPARISONS OF TEACHERS IN JOINT VOCATIONAL SCHOOLS AND COMPREHENSIVE HIGH SCHOOLS ON TEACHING PRACTICES RELATIVE TO THE INTEGRATION PROCESS

Factor Controlled	Results of Comparison
Presence or Absence of Resource Room Teacher	JVS > Comp presence > absence no interaction
Presence or Absence of Vocational Special Needs Teacher	JVS = Comp presence = absence no interaction
Presence or Absence of Special Education Teacher	JVS > Comp presence = absence interaction
Presence or Absence of School Psychologist	JVS = Comp presence = absence no interaction
Presence or Absence of Reading Specialist	JVS > Comp presence = absence no interaction
Presence or Absence of Teacher Aides	JVS > Comp presence = absence no interaction
Presence or Absence of Tutors	JVS > Comp presence = absence no interaction

COMPUTER PRACTICES USED, AND SOFTWARE NEEDS BY USE CATEGORY AND PROGRAM, AMONG AGRICULTURE TEACHERS, POSTSECONDARY TEACHERS, AND EXTENSION AGENTS

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INTRODUCTION AND NEED

Microcomputer applications are a major component of many of the emerging high technologies impacting on agriculture and agribusiness. As such, microcomputer use is necessarily a priority concern of agricultural educators at all levels.

The two basic uses for microcomputers in education were identified by Helgeson (1982) as computer-assisted instruction (CAI), and computer-managed instruction (CMI). The categories of CAI applications have been identified as tutorial, drill and practice, instructional games, simulation, problem solving, and data collection and analysis (Helgeson, 1982; and Camp, 1983). Both CAI and CMI were considered by Camp (1982) as appropriate for agricultural instruction. Record keeping, data base, and materials generation are the use categories for CMI (Helgeson, 1982). Thus, research data on the nature and extent of the applications of CAI and CMI are needed for planning educational programs to provide the competencies for current microcomputer uses, and to assess the potential and need for new applications.

The application of microcomputers for CAI and CMI is dependent in large measure on the scope, capabilities, and quality of software packages available. Thus, data is needed on the specific software packages currently accessible to agricultural educators, the appropriate applications of each to individual client groups, and the priority needs for development of additional software by type. Research providing such data is not currently available.

Also, current microcomputer applications as well as unmet needs may differ among different groups of agricultural educators. Secondary agricultural teachers, post secondary agricultural teachers, and agricultural extension agents are three educator groups included in this study. Comparative data is needed to design educational programs that will meet both the common and unique needs of individual agricultural educator groups.

In summary, research studies concerning the use of microcomputers in agricultural instruction at both the state and national levels are limited in scope and number. Thus, this study was conducted to meet the need for research data as a basis for planning preservice and in-service education programs in New York State.

PURPOSE AND OBJECTIVES

The purpose of this study was to facilitate use of microcomputers for instruction by New York agricultural secondary teachers, postsecondary teachers, and extension agents by providing data to plan preservice and inservice courses/programs, and to develop reference materials on software use. To achieve the purpose of the study, the research objectives were to:

1. identify and compare the extent to which instructional computing practices are used for teaching;
2. identify and compare the need for educational software development of computer assisted and computer managed instruction;
3. identify and compare by rank order the need for specific agricultural software program development;
4. identify and compare software programs within the categories of spreadsheets, data base management, and word processing for source availability, and effectiveness by audience(s) taught;
5. develop a catalog of software available by type.

METHODOLOGY AND DATA SOURCES

A review of related literature by the research staff failed to identify a questionnaire to meet the research objectives. Hence, an instrument was developed based on the literature review and logical synthesis by the research staff. This instrument was reviewed by 16 experts including Cornell and New York agricultural and technical college instructors, agricultural teachers, extension agents, administrators and state supervisors, industry representatives and personnel from the New York State Learning Technology Center. Instrument content validity was determined by the panel of experts. A random sample of 36 agricultural educators proportionally equal to the size of the three groups being studied in the research was selected for a field test. As a result of the field test, Cronbach's Alpha Coefficients of .94, .86 and .89 were established for three sections of the instruments which were used to measure the three separate constructs.

Lists of New York agricultural educators including 333 secondary teachers (excluding New York City non-vocational agriculture teachers), 151 postsecondary teachers, and 179 extension agents published by the professional associations and/or state education department was reviewed by leaders from the three groups to determine a complete frame for the study. A questionnaire mailed to the total membership of the three groups included a screening question to identify the population which consisted of agricultural educators who used microcomputers in their instructional program. The total population of microcomputer users was selected as the sample for the study. Thus, the "self-selected" sample identified through an initial mailing and two follow-up letters included 92 secondary teachers, 36 postsecondary teachers and 97

extension agents in agriculture. The percentage of all secondary agricultural teachers, postsecondary teachers and extension agents who used microcomputers was 27.6 percent, 23.7 percent, and 54 percent respectively. Address labels and a research log for the study were created using a microcomputer.

Follow-up of a 10 percent random sample of non-respondents to the mail survey sent to all teachers and agents determined that none used microcomputers. Thus, the self-selected microcomputer users responding were assumed to be the total population of users.

Nominal and interval level data were collected using a four-point likert scale, and open-ended questions. The analysis was limited to descriptive statistics since the sample was "self-selected" computer users who were treated as the population. The SPSS version X computer program on the mainframe at Cornell University was used for data analysis.

FINDINGS

Introduction

Descriptive, rather than inferential statistics were used for data analysis since the total population was used as the sample. Standard deviations were used to determine variability. Mean scores were used for comparison between groups of agricultural secondary teachers, postsecondary teachers, and extension agents. Tables referenced are appended at the end of the paper.

Instructional Uses of Microcomputers

Secondary teachers, postsecondary teachers, and extension agents were asked to indicate how frequently they used CAI and CMI practices on a four-point likert scale of "Never"(1) to "Frequently"(4). Mean scores for responses by the three groups are presented in Table 1.

The standard deviation on all items ranged from .76 to 1.32 indicating relatively narrow variability among respondents. The highest mean score was 2.70 indicating that the "Occasionally"(3) level was not reached for any item. The lowest score was 1.42 or slightly higher than "Never"(1) for "educational games" and "materials generation" use by extension agents. Overall, secondary teachers had higher use scores in both CAI and CMI than did postsecondary teachers or agents. "Record keeping" was used more frequently by agents than by teachers.

Need for Agricultural Software Development

Respondents in each of the three groups were asked to rate their need for agricultural software development by categories of use within CAI and CMI using a four-point likert scale of "No Need"(1), "Low Need"(2), "Medium Need"(3), and "High Need"(4). Mean scores and standard deviations for agricultural educator perceived need for software development are portrayed in Table 2.

Computer assisted instructional types consisted of "drill and practice," "tutorial", "simulation", "problem solving," and "educational games." For all groups, "educational games" was rated lowest (X = 2.06). Problem solving (X = 3.25) was the highest rated type of CAI software in need of development.

Agricultural teachers expressed the highest overall need by rating three types of CAI between 3.0 (Medium Need) and 4.0 (High Need). In contrast, the mean need scores for postsecondary teachers and extension agents were over 3.0 for "problem solving" and; "problem solving" and "simulation", respectively. "Educational games" was rated lowest by postsecondary teachers (X = 1.88), extension agents (X = 1.73), and secondary teachers (X = 2.36). Variability among respondent group ratings as measured by standard deviations ranged from .597 to 1.1.

Computer managed instructional types in need of development included "record keeping," "materials generation," "data base use" and "word processing." CMI (X = 2.9) development was rated at a higher need level by all groups than CAI (X = 2.79). For all groups, "data base" (X = 3.13) and "material generation" (X = 2.72) were rated highest and lowest, respectively. Secondary teachers rated three of four types of CMI 3.0 or higher in comparison with postsecondary teachers who rated two types at this level. Extension agents rated all CMI types below the 3.0 level. Standard Deviations ranged from .812 to 1.182 for CMI.

Respondents were asked to list in priority order titles of three programs they needed developed without regard to category or type. A total of 119 different titles were identified. Overall, record keeping programs were most frequently identified (f=46) followed by dairy/animal ration balancing (f=27). Approximately ninety percent of the other 117 software titles appeared to be "problem solving" or "simulation" in nature. Program titles related to production agriculture (f=46), agricultural business (f=23), mechanics (f=20), horticulture (f=7), conservation (f=3), youth organization activities (f=3), and class management packages (f=3). Agricultural secondary teachers, post-secondary teachers and extension agent ranking of needs were similar when frequency counts were compared by content area and by CAI and CMI type categories with the exception of "record keeping" and "youth organizations" for which no postsecondary teacher expressed a need.

Availability and Effectiveness of Agricultural Software

Agricultural educators were asked to indicate the availability of selected spreadsheet, data base management and word processing programs; and the effectiveness of these programs when used at the elementary, secondary, two-year college, and adult levels. Ratings were by a four-point likert-type scale (1 = poor; 2 = fair; 3 = good; 4 = excellent). Data frequencies were too low to determine effectiveness at the elementary school level.

Spreadsheets were available to 33 percent of respondents. By category, 21 percent had visicalc, five percent supercalc, and 7.5 percent other types. Mean score ratings of visicalc for secondary, postsecondary and adult levels were 3.18, 3.37 and 3.35, respectively. Standard deviations for visicalc ratings ranged from .447 to .779.

Twenty-two percent of respondents had access to data base management programs. The PFS was the most frequently reported data base management program (8 %) and DBase II (6 %) of those responding. Agricultural educators rated the effectiveness of PFS 3.3, 3.5 and 3.34, respectively, for use with secondary, postsecondary and adult audiences. The standard deviations ranged from .557 to 1.06.

Word processing programs including Wordperfect (8 %), Bankstreet Writer (8 %), and other types (20 %) were accessible to 35.5 percent of the respondents. Effectiveness mean scores for the programs named ranged from 2.8 to 4.0 for use with secondary, postsecondary and adult audiences (SD = .547 to 1.26).

Secondary teachers and extension agents consistently rated spreadsheet, data base management and word processing programs higher than did postsecondary teachers.

Catalog of Software

Secondary teachers, extension agents, and postsecondary teachers were asked to list titles of agricultural programs they were currently using. Secondary teachers identified eight-six programs followed by extension agents with twenty-nine, and extension agents with ten programs. No more than two users were found for any listed program. Plans to have users rate the quality of the software were abandoned after a prior study revealed wide discrepancies in ratings by teachers as a result of teacher differences in microcomputer skills, attitudes towards computer use and the ability to identify appropriate strategies for using software.

A catalog of software was developed with independent listings for secondary agriculture teachers, postsecondary teachers and extension agents. User names, addresses and telephone numbers were provided for each program.

A catalog addendum is being developed to include listings by title, computer compatibility, a brief description of content, and suggested uses.

CONCLUSIONS

The conclusions that follow are based on the findings of the study.

1. Secondary teachers, postsecondary teachers and agents use all types of CAI and CMI to some extent. However, mean use scores below 3.0 ("Occasionally") indicates that microcomputer use is not currently a major part of the total job of any of the three respondent groups.

2. As a percentage of the total group, more extension agents use computers than do secondary and postsecondary teachers. This may reflect more agents teaching management topics.

3. The extent of microcomputer use by users is greater for secondary and postsecondary teachers than for agents. This may be caused by less group instruction by agents.

4. Need for software development is low to medium in most types of CAI and CMI which reflects a relatively low frequency of microcomputer use among agricultural educators. This could be attributed to a lack of software and/or a lack of knowledge about using the microcomputer for teaching.

5. Problem solving and simulation are the priority need areas for software development among agricultural educators. "Educational games" is the lowest priority areas for software development among respondents in the study. The education profession and software developers need to work together in identifying priority areas for software development.

6. Development of "materials generation" software is more important for secondary teachers than the other two respondent groups. This is probably due to the nature of secondary teaching and the need for high quality visual support materials.

7. Extension agents have the lowest need for software development under CMI which is probably related to their occasional group instruction responsibilities.

8. Software development for secondary teachers, postsecondary teachers, and extension agents should be developed according to the priority needs indicated by each of the three groups.

9. A catalog of software programs is needed to guide agricultural educators on selection. Information on present users of software

packages should be included in the catalog to provide recommendations and/or consultation for new users.

10. Interrater bias and a heterogenous population makes its difficult to conduct a valid and reliable evaluation of software. Factors such as computer use skills, ability to identify creative uses of the computer, user attitudes toward computers, and a limited users affect ratings.

RECOMMENDATIONS

1. Courses and workshops should be developed and taught to assist teachers in developing appropriate strategies for use of microcomputer and microcomputer skill development.

2. Teacher educators, staff supervisors, and instructional support staff should help identify high quality educational software for use by agricultural educators.

3. Additional research beyond these research findings should be conducted to guide agricultural software developers .

4. In the absence of agricultural problem solving and simulation software which were rated as high need areas, agricultural educators should learn how to use and develop spreadsheet and data base templates which could serve this purpose.

5. Agricultural educators should teach students how to use spreadsheets and data base programs to solve agriculture problems, and use word processing in communications.

6. Quasi-experimental and experimental research should be conducted to provide data on the effectiveness of using CAI and CMI for instruction. Although survey research is useful, it only describes the setting at one point in time rather than providing controlled treatment data which allows researchers to explain, predict and infer.

REFERENCES

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Helgeson, Stanley L., "Microcomputers and Science Teaching." ERIC Science, Mathematics and Environmental Education. Fact Sheet No. 3, 1982.

Table 1

Instructional Uses of Microcomputers by Secondary and Postsecondary Agricultural Teachers and Extension Agents

Use	Mean Scores and Standard Deviations							
	Secondary Teachers		Postsecon. Teachers		Extension Agents		Total Group	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CAI								
Drill and Practice	2.10	.99	1.58	1.09	1.83	.87	1.84	.98
Tutorial	2.15	.96	1.98	1.06	1.84	1.05	2.03	1.01
Problem solving	2.49	1.10	2.09	1.11	2.25	1.10	2.28	1.11
Simulation	1.82	.89	1.84	1.04	2.26	1.05	1.89	.99
Educational games	1.86	.91	1.44	.83	1.42	.76	1.61	.86
CMI								
Record keeping	2.12	1.22	1.88	1.30	2.70	1.00	2.11	1.17
Materials generation	2.00	1.11	1.88	.76	1.42	1.04	1.86	1.04
Data base use	2.05	1.15	2.50	1.12	2.05	1.07	2.25	1.13
Word processing	2.13	1.32	2.33	1.22	2.05	1.21	2.21	1.25

1=Never, 2=Seldom, 3=Occasionally, and 4=Frequently

N=92 secondary teachers, N=36 postsecondary teachers, N=97 extension agents

Table 2

Need for Educational Software Development by Secondary and Postsecondary Agricultural Teachers, and Extension Agents

Use	Mean Scores and Standard Deviations							
	Secondary Teachers		Postsecon. Teachers		Extension Agents		Total Group	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CAI								
Drill & practice	2.90	.891	2.23	.852	2.52	.904	2.55	.923
Tutorial	3.17	.833	2.91	.968	2.73	.871	2.99	.909
Problem solving	3.39	.826	3.07	.903	3.40	.680	3.25	.851
Simulation	3.15	.987	2.98	1.009	3.36	.597	3.11	.952
Educational games	2.36	.970	1.88	.891	1.73	.805	2.06	.943
CMI								
Record keeping	3.09	.975	3.03	.971	2.60	.994	2.99	.976
Materials generation	3.11	.992	2.50	1.02	2.35	.812	2.72	1.028
Data base use	3.02	1.059	3.42	.730	2.60	.994	3.13	.954
Word processing	2.77	1.102	2.91	1.047	2.50	.888	2.79	1.056

1=No Need, 2=Low Need, 3=Medium Need, 4=High Need

N=92 secondary teachers, N=36 postsecondary teachers, N=97 extension agents

VOCATIONAL AGRICULTURE TEACHERS' AND THEIR ADMINISTRATORS' PERCEPTIONS CONCERNING SELECTED ACTIVITIES/TASKS PERFORMED BY VOCATIONAL AGRICULTURE TEACHERS

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In recent years, concern has been expressed regarding the contemporary vocational agriculture teacher's commitment to the profession. National workshops on Supervised Occupational Experience have been held in an attempt to shore up this vital phase of the program. Ricketts and Newcomb (1984) suggest that leadership and personal development abilities of vocational agriculture students are far lower than those with which the profession can be pleased. Clary, et al. (1976-78), looking at the state of vocational agriculture and the changing roles of teachers, reported the length of "at school" time a vocational agriculture teacher is spending is rapidly approaching that of all other teachers; supervised occupational experience and adult education programs are weak; and the FFA is not as effective as it once was.

The philosophical base held by the teacher determines, to a large extent, efforts expended in and success of various aspects of the program. To a lesser degree, beliefs and expectations of the teacher's school administrators influence his/her actions.

OBJECTIVES

This study was an attempt to determine how strongly West Virginia vocational agriculture teachers and their immediate administrators believe in selected activities and tasks expected of vocational agriculture teachers, and how well they perceive those activities/tasks are being performed.

METHODOLOGY

Thirty statements, considered by a committee of professional agricultural educators to be important activities and tasks of vocational agriculture teachers, were included in a questionnaire. Questionnaires were mailed to the 111 West Virginia vocational agriculture teachers, to the 72 principals of high schools where vocational agriculture is taught, and to the 40 county vocational directors in counties where vocational agriculture is offered. A followup letter was sent to those who had not responded by the designated date. Completed questionnaires were returned from 73 vocational agriculture teachers (66 percent), 43 principals (60 percent), and 28 vocational directors (70 percent), an overall response rate of 65 percent.

The following rating scales were used to analyze the degree of belief participants expressed in the importance of each selected activity and their opinions concerning performance of those activities:

Belief	How Well Done
1 - Not at all	1 - Not at all
2 - Somewhat	2 - Fairly well done
3 - Strongly	3 - Well done
4 - Very Strongly	4 - Very well done

The analysis of variance statistical procedure was used to ascertain whether significant differences existed among mean ratings of participant groups. The alpha level was set a priori at .05.

FINDINGS

Major findings emerging from this survey are described in the following paragraphs.

Opinions Regarding Beliefs

Data indicating how strongly West Virginia vocational agriculture teachers and their immediate administrators believe in various activities and tasks performed by the vocational agriculture teacher are presented in the Table under four headings: Classroom Activities; Supervised Occupational Experience Programs; FFA Activities; and Miscellaneous Activities. By far the strongest belief expressed by both groups concerned the maintenance of classroom discipline. Very strong beliefs were also expressed by both groups for working harmoniously with other teachers in the school, in holding an annual parent-member banquet and in the need for gaining confidence and respect of the farm/agribusiness community.

Teachers expressed significantly greater beliefs than did their administrators in the need to develop a course of study based on local needs, discipline, and in nearly every aspect of SOEP. Teachers also felt significantly stronger than their immediate administrators on insisting that each vocational agriculture student become an FFA member.

Administrators expressed significantly greater belief than did teachers in involving students in FFA activities: contests, conventions and proficiency awards. They also indicated significantly stronger belief in the need for the teacher to hold a meeting with parents of first-year students and in teacher participation in the annual vocational conference.

Both groups expressed the least belief in expecting senior students to earn a thousand dollars or more through their supervised occupational experience programs.

Opinions Regarding Performance

Also found in the Table are data regarding opinions of teachers and their administrators concerning teacher performance in the same 30 activities/tasks expected of the vocational agriculture teacher. Both teachers and their administrators rated the FFA parent-member banquet as the activity that teachers do best.

Also rated highly was the teachers' insistence that all vocational agriculture students become FFA members.

At the opposite end of the performance scale, four items were rated low: helping students find employment upon graduation; placement of students in community agribusiness firms; the freshmen parent meeting; and the expectation of substantial earnings by senior students. In general, teacher performance was rated highly by teachers and their administrators in the areas of FFA and classroom activities. Even though teachers rated importance of SOEP activities quite high, they and their administators rated performance in this area relatively low. Performance in recruitment and selection of students was also rated low in relation to belief in importance of the activity. In their comments, teachers expressed frustration that they have little voice in recruitment or selection of students, yet are accountable for program results. They also noted severe constraints in taking field trips by school policy which does not recognize the value of such activities in vocational agriculture programs.

RECOMMENDATIONS

Based upon study results and comments made by participants, the following recommendations were offered:

1. Although teachers express strong belief in the importance of supervised occupational experience programs, they do not rate performance in this phase of the program highly nor do most consider student earnings through SOEP to be of great importance. Means should be explored, perhaps in preservice and inservice education offerings, to motivate excellence in experience program involvement, supervision and growth, and establishment in farming or agribusiness upon graduation.

2. Administrators do not hold strong beliefs in the importance of supervised occupational experience programs. Efforts should be made to increase their awareness and appreciation for this critical aspect of vocational agriculture.

3. It is recommended that vocational agriculture teachers be given major responsibility for recruiting and selecting students into the program. This will call for close cooperation with guidance counselors.

4. School policies should be reviewed and revised to encourage use of class field trips. Administrators and boards of education should be made aware of the educational value of one- or two-hour field trips in teaching vocational agriculture. Local advisory councils can assist in this endeavor.

5. Although emphasis on FFA activites should be held in check, teachers should recognize the great public relations value of judicious involvement of students in various leadership events. Teachers should continue to insist that vocational agriculture students become FFA members.

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Ricketts, S. Clifton and L. H. Newcomb. (1984). Leadership and personal development abilities possessed by high school seniors who are members in superior and non-superior FFA chapters, and by seniors who were enrolled in vocational agriculture." AATEA Journal, 25(Summer)51-59.

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Table

Vocational Agriculture Teachers' and Their Administrators' Perceptions Regarding Their Beliefs and How Well Selected Activities in Vocational Agriculture are Performed.

STATEMENT	BELIEF				HOW WELL DONE			
	Profession			Overall	Profession			Overall
	T (n=73)	AD (n=71)	F-Value	Mean (N=144)	T (n=73)	AD (n=69)	F-Value	Mean (N=142)
The Vocational Agriculture Teacher Must:								
I. Classroom Activities								
1. Develop a course of study based upon needs of the local community.	3.63	3.35	6.67*	3.49	2.98	2.68	2.71	2.79
2. Maintain discipline in the classroom.	3.93	3.82	4.39*	3.88	3.23	2.98	4.25*	3.10
3. Cope with individual differences of students.	3.49	3.39	0.87	3.44	2.88	2.64	1.26	2.72
4. Actively recruit and select students.	3.30	3.30	0.00	3.30	2.21	2.41	2.56	2.30
5. Organize and use numerous class field trips (1 or 2 periods in length) to teach skills and explore opportunities.	3.18	3.25	0.40	3.22	2.14	2.74	20.10*	2.43
6. Teach adult and/or young farmer classes.	3.08	3.09	0.00	3.08	2.34	2.44	0.26	2.38
7. Base the upper class agricultural mechanics classes on construction/repair projects.	3.27	3.17	0.58	3.22	2.88	2.64	2.31	2.76
II. Supervised Occupational Experience Program								
1. Explore Supervised Occupational Experience Program (SOEP) opportunities with first year students.	3.56	3.19	8.95*	3.36	2.78	2.50	2.17	2.60
2. Promote growth and scope in SOEPs.	3.55	3.28	6.11*	3.41	2.76	2.44	3.65	2.60
3. Supervise Occupational Experience Programs (SOEPs) at critical times.	3.74	3.46	8.42*	3.60	2.65	2.57	0.39	2.61
4. Use summer months primarily for supervision of student experience programs.	3.54	3.32	4.02*	3.43	2.86	2.79	0.24	2.82
5. Expect each senior student to earn a thousand dollars or more through his/her SOEP.	2.75	2.39	5.40*	2.57	2.20	2.06	0.95	2.13
6. Supervise each student SOEP at least four times during the year.	2.86	3.04	1.76	2.95	2.19	2.49	6.25*	2.33
7. Involve first-year students in profitable and challenging SOEPs.	3.29	3.00	5.80*	3.15	2.49	2.35	1.40	2.42
8. Place students with agribusiness firms in the community.	2.94	2.94	0.00	2.94	2.06	2.09	0.05	2.07
9. Promote entrepreneurships for students with off-farm agricultural interests.	3.07	3.07	0.00	3.07	2.16	2.34	1.96	2.25
10. Hold a meeting with parents of first-year students to explain expectations of students, parents and teachers.	2.88	3.39	10.12*	3.08	1.90	2.27	5.14*	2.08

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Table (Cont.)

STATEMENT	BELIEF: Profession T (n=73)	BELIEF: Profession AD (n=71)	BELIEF: F-Value	BELIEF: Overall Mean (N=144)	HOW WELL DONE: Profession T (n=73)	HOW WELL DONE: Profession AD (n=69)	HOW WELL DONE: F-Value	HOW WELL DONE: Overall Mean (N=142)
III. FFA Activities								
1. Train students in public speaking.	3.08	3.14	0.33	3.11	2.84	2.56	4.34*	2.71
2. Train and enter students in state vo-ag judging contests.	3.14	3.52	11.72*	3.33	2.82	3.20	7.22*	3.01
3. Involve students in the state and national FFA conventions.	3.30	3.54	4.43*	3.42	3.00	3.13	0.91	3.06
4. Prepare students for proficiency awards.	3.09	3.39	6.82*	3.24	2.69	2.87	4.71*	2.73
5. Hold an annual FFA parent-member banquet.	3.67	3.54	1.48	3.60	3.56	3.43	1.31	3.50
6. Insist that all vo-ag students become FFA members.	3.62	3.28	6.25*	3.45	3.30	3.31	0.01	3.31
7. Involve students in the scholastic contests.	3.37	3.36	0.01	3.36	3.00	2.87	0.86	2.94
IV. Miscellaneous Activities								
1. Effectively use an advisory council.	2.99	3.14	1.46	3.06	2.21	2.40	1.89	2.30
2. Gain confidence and respect of the farm/agribusiness community.	3.59	3.62	0.11	3.60	2.90	2.96	0.19	2.93
3. Help students find employment upon graduation.	3.04	2.96	0.45	3.00	2.13	2.01	0.97	2.07
4. Belong to and participate in professional teacher organizations.	3.08	3.23	0.86	3.15	2.99	2.90	0.3[illegible]	2.94
5. Attend and participate in the annual vocational conference.	3.14	3.55	11.40*	3.34	3.08	3.27	3.[illegible]6	3.17
6. Work harmoniously with other teachers in the school.	3.64	3.77	2.64	3.71	3.32	3.17	1.19	3.24

RATING SCALES:	BELIEF	HOW WELL DONE
	1 - not at all	1 - not at all
	2 - somewhat	2 - fairly well done
	3 - strongly	3 - well done
	4 - very strongly	4 - very well done

*Significant at the .05 level of confidence.